ORDER NO. SD8004-1728

# Service Manual

## FM/AM Stereo Receiver

# SA-818

[M], [MC]

Simulated wood cabinet

**Areas**

* [M] is available in U.S.A.
* [MC] is available in Canada.

## TECHNICAL SPECIFICATIONS (Specifications are subject to change without notice for further improvement.)

**(IHF '78)**

### ■ AMPLIFIER SECTION

**Rated minimum sine wave RMS power output**
**20 Hz~20 kHz both channels driven**
**0.005% total harmonic distortion**
110W per channel (8 ohms)
**0.008% total harmonic distortion**
150W per channel (4 ohms)

| | |
|---|---|
| **1 kHz continuous power output** | |
| **both channels driven** | |
| **0.001% total harmonic distortion** | |
| | 120W per channel (8 ohms) |
| | 170W per channel (4 ohms) |
| **Dynamic headroom** | 1.5 dB (8 ohms) |
| | 2.0 dB (4 ohms) |
| **Total harmonic distortion** | |
| **rated power at 20 Hz~20 kHz** | 0.005% (8 ohms) |
| | 0.008% (4 ohms) |
| **half power at 20 Hz~20 kHz** | 0.005% (8 ohms) |
| **half power at 1 kHz** | 0.001% (8 ohms) |
| **SMPTE intermodulation distortion** | 0.01% (8 ohms) |
| **Frequency response** | |
| **PHONO** | RIAA standard curve ±0.3 dB |
| **AUX, TAPE** | 5 Hz~100 kHz, −3 dB |
| | 20 Hz~20 kHz, +0 dB, −0.3 dB |
| **Input sensitivity** | |
| **PHONO** | 0.28 mV (2.5mV, IHF '66) |
| **AUX, TAPE** | 16 mV (150mV, IHF '66) |
| **S/N (IHF, A)** | |
| **PHONO** | 74 dB (82 dB, IHF '66) |
| **AUX, TAPE** | 79 dB (100 dB, IHF '66) |
| **Maximum input voltage** | |
| **PHONO** | 180 mV (190 mV, 1 kHz) |
| **Input impedance** | |
| **PHONO** | 47 kilohms |
| **AUX, TAPE** | 33 kilohms |
| **Tone controls** | |
| **bass** | 50 Hz, +10 dB~ −10 dB |
| **treble** | 20 kHz, +10 dB~ −10 dB |
| **middle** | 1 kHz, +6 dB~ −6 dB |
| **Acoustic controls (at tone "0" position)** | |
| **low boost** | 100 Hz, +6 dB |
| **high boost** | 10 kHz, +6 dB |
| **low cut** | 70 Hz, −6 dB/oct. |
| **high cut** | 7 kHz, −6 dB/oct. |
| **Loudness control (volume at −30 dB)** | 50 Hz, +9 dB |
| **Muting** | −20 dB |
| **Output voltage** | |
| **REC OUT** | 150 mV |
| **Low frequency damping factor** | 50 (8 ohms) |
| | 25 (4 ohms) |
| **Load impedance** | |
| **MAIN or REMOTE** | 4~16 ohms |
| **MAIN and REMOTE** | 8~16 ohms |


Technics

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## ■ FM TUNER SECTION

| | |
|---|---|
| **Frequency range*** | 87.9~107.9 MHz |
| **Sensitivity** | 10.3 dBf (1.8 μV, IHF '58) |
| **50 dB quieting sensitivity** | |
| **MONO** | 13.2 dBf (2.5 μV IHF '58) |
| **STEREO** | 36.2 dBf (35.4 μV IHF '58) |
| **Total harmonic distortion (normal)** | |
| **100 Hz** | 0.15% (MONO), 0.25% (STEREO) |
| **1 kHz** | 0.1% (MONO), 0.15% (STEREO) |
| **6 kHz** | 0.25% (MONO), 0.3% (STEREO) |
| **S/N** | |
| **MONO** | 76 dB |
| **STEREO** | 72 dB |
| **Frequency response** | 20 Hz~15 kHz, +0.2 dB, −0.8 dB |
| **Alternate channel selectivity** | |
| **normal ±400 kHz** | 65 dB |
| **narrow ±400 kHz** | 85 dB |
| **narrow ±300 kHz** | 75 dB |
| **Capture ratio (normal)** | 1.2 dB |
| **Image rejection at 98.1 MHz** | 80 dB |
| **IF rejection at 98.1 MHz** | 90 dB |
| **Spurious response rejection at 98.1 MHz** | 100 dB |
| **AM suppression** | 60 dB |
| **Stereo separation (normal)** | |
| **1 kHz** | 45 dB |
| **10 kHz** | 35 dB |
| **Carrier leak** | |
| **19 kHz** | −65 dB |
| **38 kHz** | −70 dB |
| **FM de-emphasis** | 25μs, 50μs, 75μs |
| **Antenna terminals** | 300 ohms (balanced)<br>75 ohms (unbalanced) |

## ■ AM TUNER SECTION

| | |
|---|---|
| **Frequency range*** | 530~1620 kHz |
| **Sensitivity** | 30 μV, 250 μV/m |
| **Selectivity** | 55 dB |
| **Image rejection at 1000 kHz** | 50 dB |
| **IF rejection at 1000 kHz** | 45 dB |

## ■ GENERAL

| | |
|---|---|
| **Power consumption** | 590W, 740 VA |
| **Power supply** | AC 120V, 60 Hz |
| **Batteries (for memory "back-up")** | DC 4.5V<br>3 "AA" size batteries<br>Panasonic UM-3 or equivalent |
| **Dimensions (W×H×D)** | 566 × 172 × 396 mm<br>(22-9/32" × 6-25/32" × 15-19/32") |
| **Weight** | 18.5 kg<br>(40.8 lb.) |

**Note:**
Total harmonic distortion is measured by the digital spectrum analyzer (HP. 3045 system).

*This unit is equipped with an FM/AM allocation selector on the rear panel. The specifications shown above are correct with this selector set to the "FM 200 kHz/AM 10 kHz" position. If it is set to the "FM 50 kHz/AM 9 kHz" position, however, the FM frequency range becomes 87.5~108.0 MHz, and the AM frequency range becomes 522~1611 kHz.

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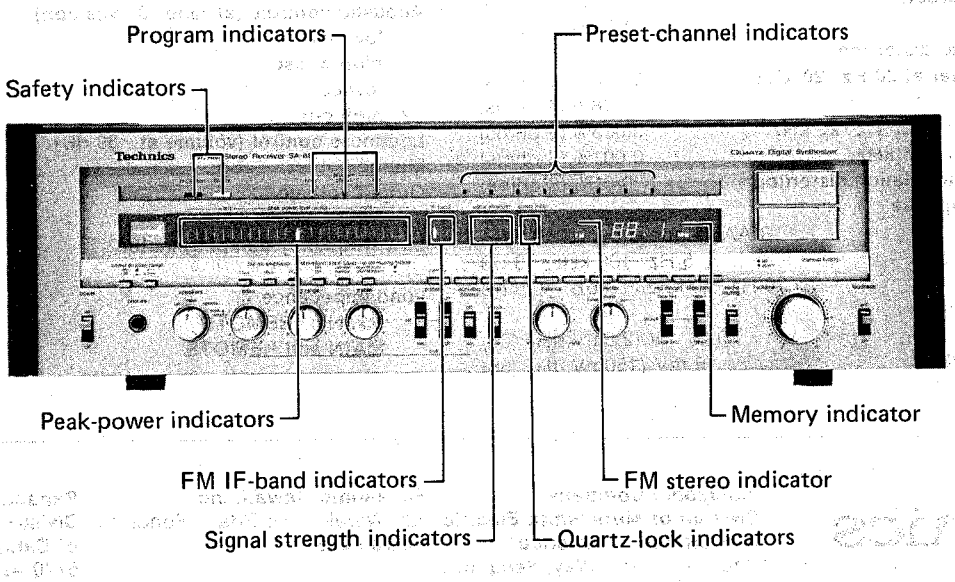
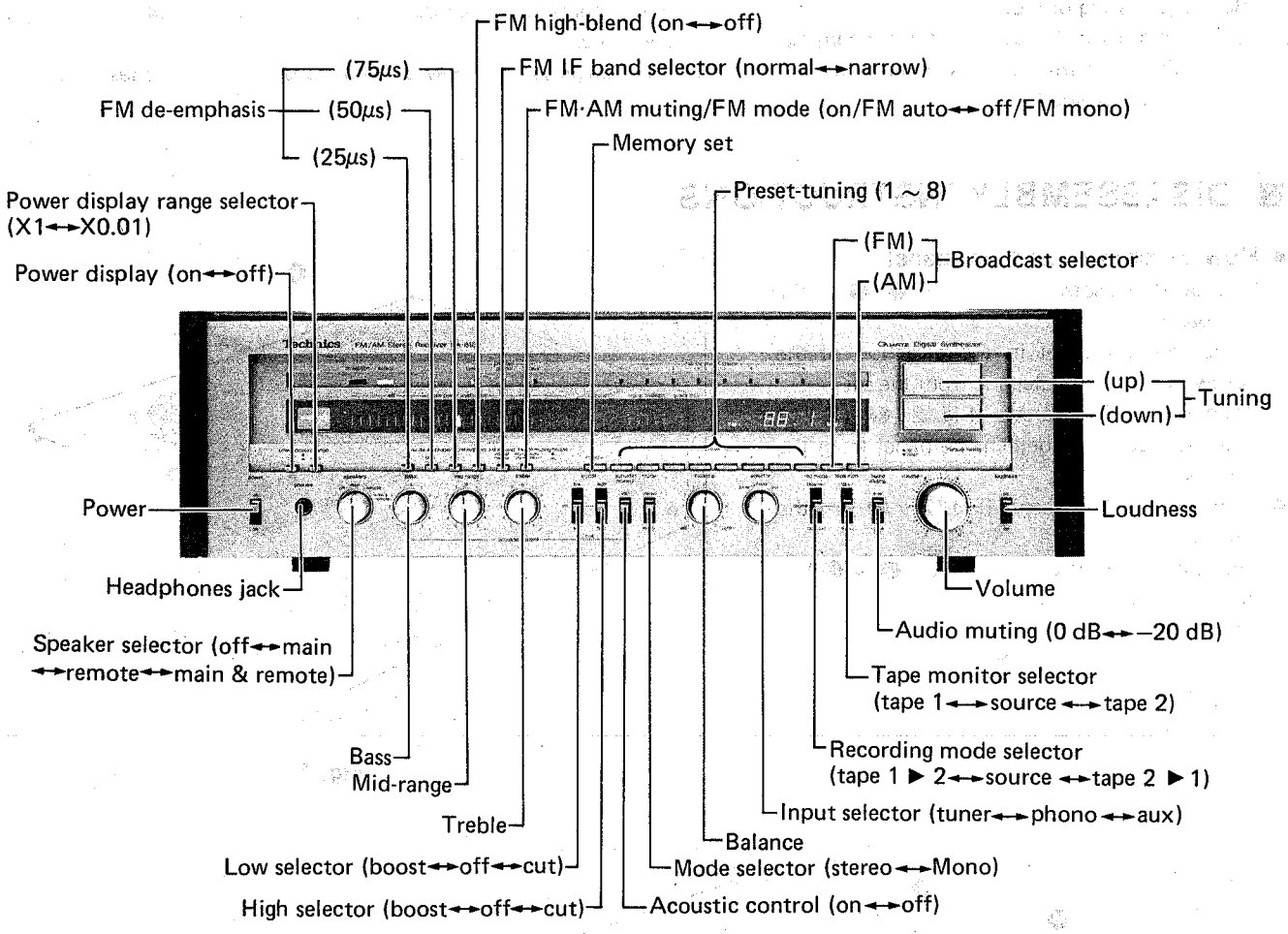
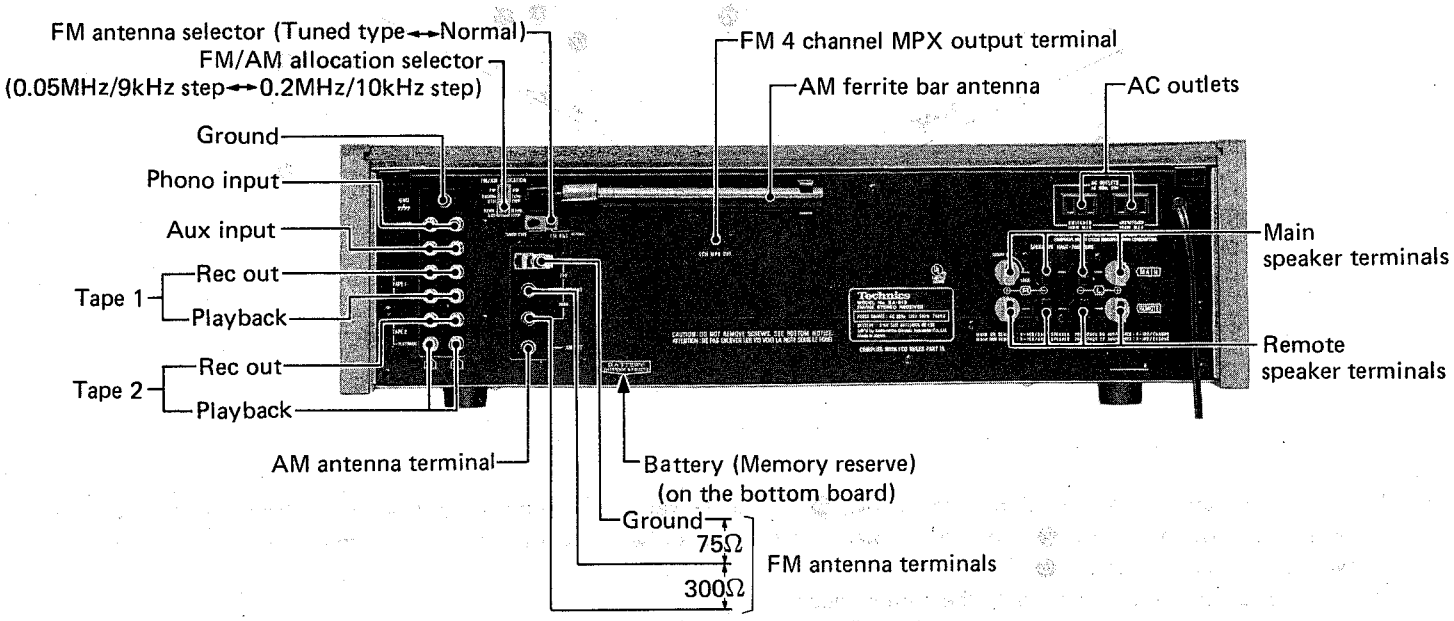
# ■ LOCATION OF CONTROLS




FM high-blend (on↔off)
(75μs)
FM IF band selector (normal↔narrow)
FM de-emphasis
(50μs)
FM·AM muting/FM mode (on/FM auto↔off/FM mono)
(25μs)
Memory set
Power display range selector (X1↔X0.01)
Preset-tuning (1 ~ 8)
(FM)
Broadcast selector
Power display (on↔off)
(AM)
(up)
Tuning
(down)
Power
Loudness
Headphones jack
Volume
Audio muting (0 dB↔−20 dB)
Speaker selector (off↔main ↔remote↔main & remote)
Tape monitor selector (tape 1↔source↔tape 2)
Bass
Mid-range
Recording mode selector (tape 1 ▶ 2↔source ↔tape 2 ▶ 1)
Treble
Input selector (tuner↔phono↔aux)
Balance
Low selector (boost↔off↔cut)
Mode selector (stereo↔Mono)
High selector (boost↔off↔cut)
Acoustic control (on↔off)


FM antenna selector (Tuned type↔Normal)
FM/AM allocation selector (0.05MHz/9kHz step↔0.2MHz/10kHz step)
FM 4 channel MPX output terminal
AM ferrite bar antenna
AC outlets
Ground
Phono input
Aux input
Tape 1
Rec out
Playback
Tape 2
Rec out
Playback
Main speaker terminals
Remote speaker terminals
AM antenna terminal
Battery (Memory reserve) (on the bottom board)
Ground
75Ω
300Ω
FM antenna terminals

## ■ BEFORE STARTING THE REPAIRING

Before adjusting or repairing, be sure to short-circuit opposite poles of the 8200μF capacitors (C701 ~ 704) with a resistor approximately of "50Ω, 5W" for discharging the charged voltage.
Short-circuiting with a screw driver and the like is not only dangerous, but may destroy transistors and diodes, and should therefore be avoided.

## ■ DISASSEMBLY INSTRUCTIONS

**• How to remove the front panel**

1. Remove the 2 setscrews (Fig. 1 : ❶, ❷)of the top panel.
2. Slide the top panel in the direction of the arrow in Fig. 1 to detach it from the set.
3. Remove the 7 setscrews (Fig. 2 : ❸~❾) of the right panel to detach the panel from the chassis.
4. Remove the 1 setscrew (Fig. 2 : ❿ ) of the left panel.
5. Remove the 5 setscrews (Fig. 2 : ⓫ ~ ⓯ ) of the front panel.

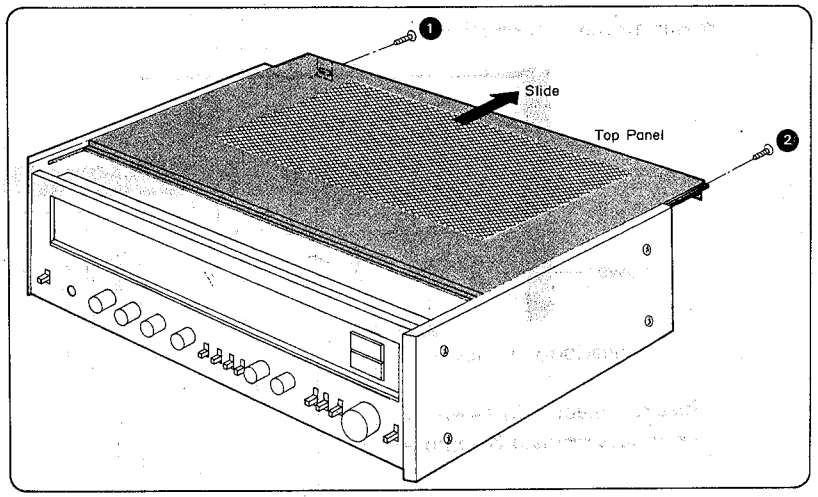



Fig. 1

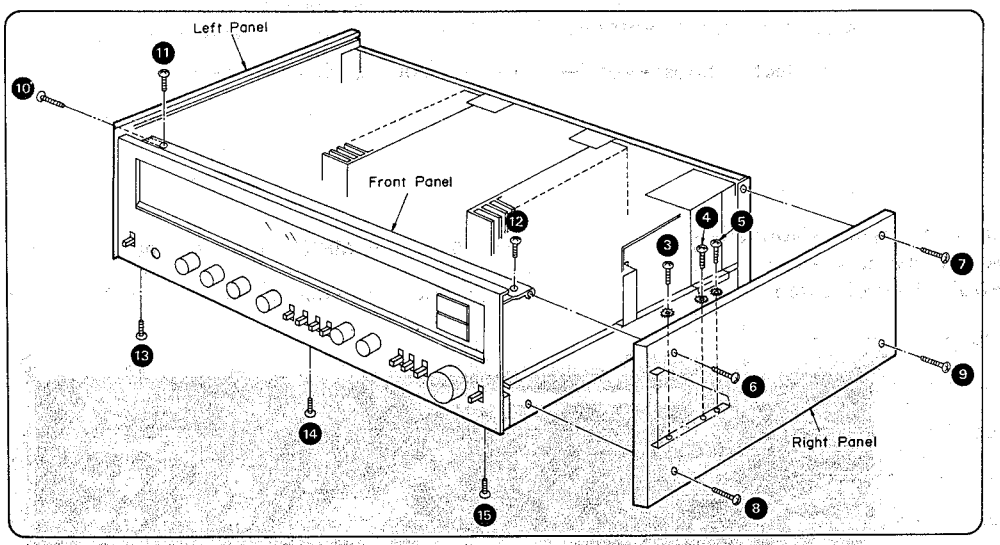



Fig. 2

6. Move the front panel in the direction of the arrow Ⓐ in Fig. 3. Next, holding the left bottom of the front panel, move it in the direction of the arrow Ⓑ until the power switch knob is disengaged from the hole of the front panel, and then remove the front panel. (arrow Ⓒ)
   Note: Take care not to give damage to the switch knobs.
7. As shown in Fig. 4, remove the setscrews ⓰ , ⓱ , and 5 lugs to detach the LED display printed circuit boards from the back of the front panel.

## • How to remove the printed circuit boards

1. Remove the front panel, and the LED display printed circuit boards secured on it. (Refer to "How to remove the front panel.")
2. Remove the 2 setscrews (Fig. 5 : ⑱ , ⑲ ) to detach the printed circuit board (top) of the tuner circuit as shown in Fig. 5.
3. To detach the voltage regulator printed circuit board, remove the setscrews ⑳ and ㉑, then lift the board in the direction of the arrow in the Fig. 5 to detach it from the chassis.
4. To detach the FL display printed circuit board (center), first remove the tuner printed circuit board and the 4 setscrews (Fig. 6 : ㉒ ~ ㉕ ) of the shield plate (upper), and then lift the circuit board in the direction of the arrow in Fig. 6.

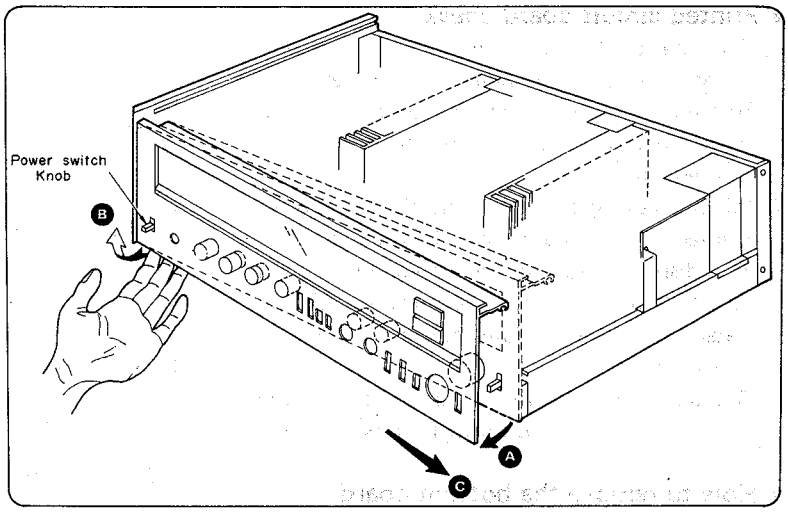



Fig. 3

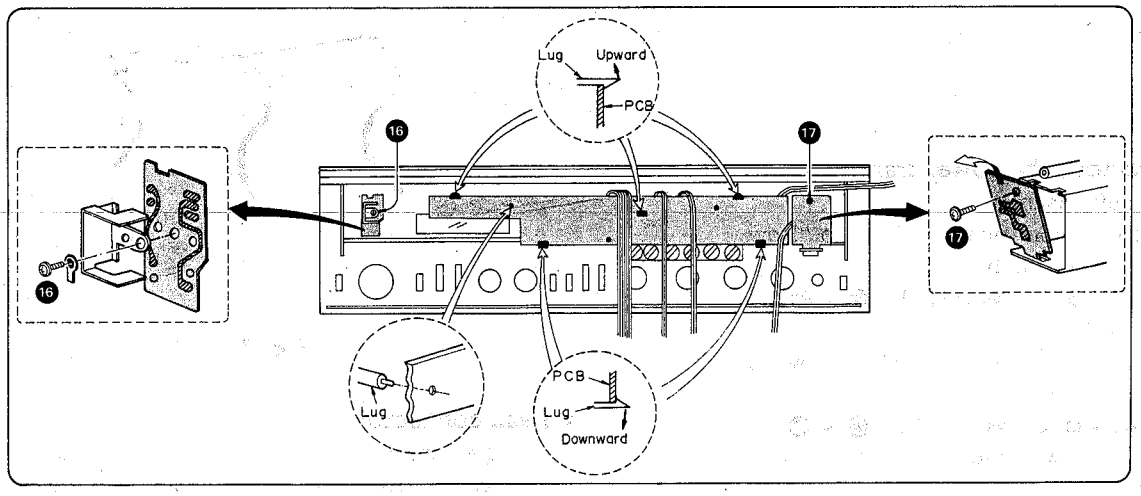



Fig. 4

**Note:** For ⑲ and ⑳ in Fig. 5, screw (XTB3+8BFZ1) provided with pin like **A** encircled by dotted line is used. However, to replace them, use 3 x 8mm tapping screw (XTB3+8BFZ) and toothed lock washer (XWC3B) like **B**.

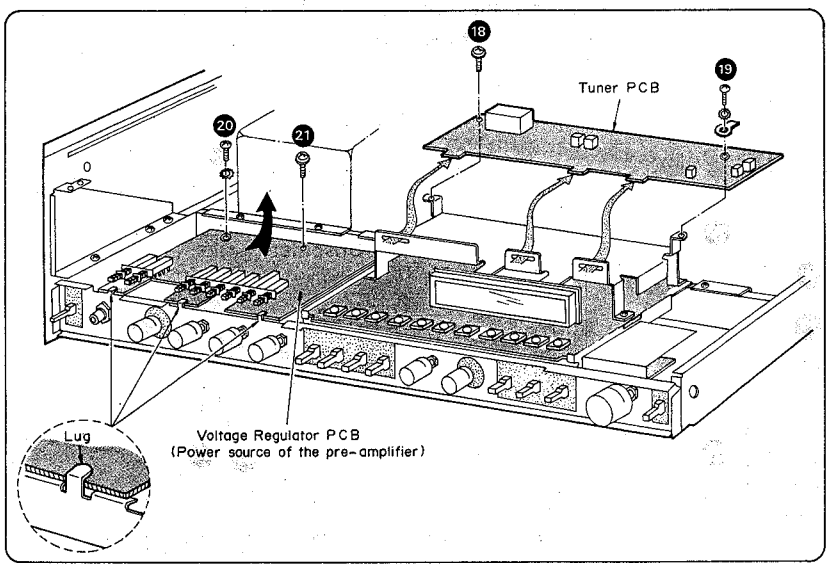
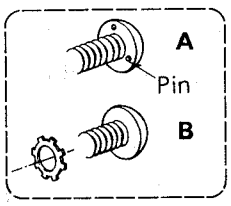



Fig. 5



## • Printed circuit board check

1. For the LED display printed circut board, tuner printed circuit board, voltage regulator printed circut board and FL display printed circuit board, refer to "How to remove the printed circuit board."
2. When checking the tone control and pre-drive printed circuit board, first detach the tuner, FL display and voltage regulator printed circuit board, then remove setscrew ㉖ to detach the shield plate bottom (lower) as shown in Fig. 7.
   Subsequently, remove the bottom board, and then the printed circuit board can be checked.

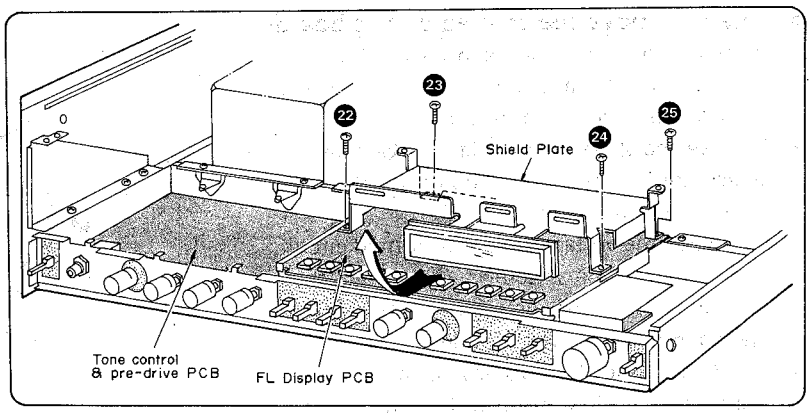



Fig. 6

## • How to remove the bottom board

1. Remove the 12 setscrews (Fig. 8 : ㉗ ~ ㊳) of the bottom board.
2. Remove the bottom board.

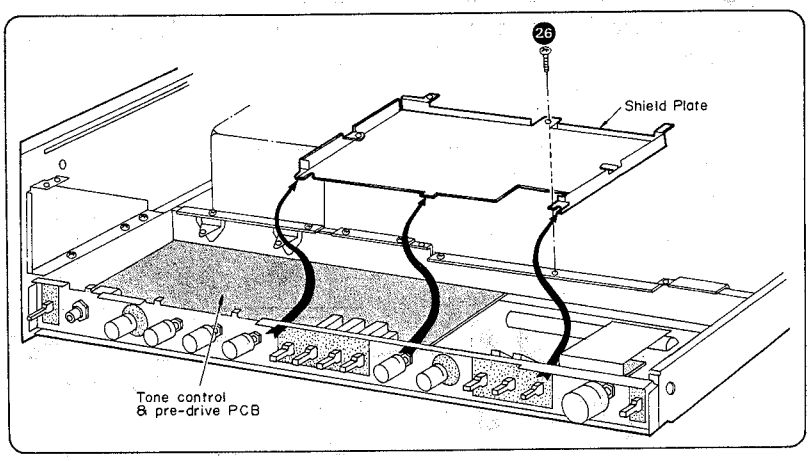



Fig. 7

## • How to remove the power transistor

(Example: Left channel)

1. Remove the bottom board. (Refer to "How to remove the bottom board.")
2. Remove the 4 setscrews (Fig. 9 : ㊴ ~ ㊷) of the heat sink.
3. Remove the top panel. (Refer to "How to remove the front panel.")
4. Remove the 4 setscrews (Fig. 10 : ㊸ ~ ㊻) of the metal fitting which secures the electrolytic condenser.
   Then the metal fitting can be removed.
5. Unsolder the power transistor. (Fig. 9)
6. Remove the transistor along with the heat-sink from the printed circuit board as shown in Fig. 10.
7. When installing the power transistor onto the heat-sink, apply a heat diffusing agent to both sides of the mica plate.

## • Lead connector

1. To disconnect the lead wires from the lead connector, open the "lead holder" of the connector as shown in Fig. 11, and pull out the lead wires.
2. The lead wires are provided with identification colors or patterns as in Fig. 11. So, insert them into the connector in correct positions.
3. It is advisable to put pencil marks on both the leads and the connector beforehand for the convenience of insertion.

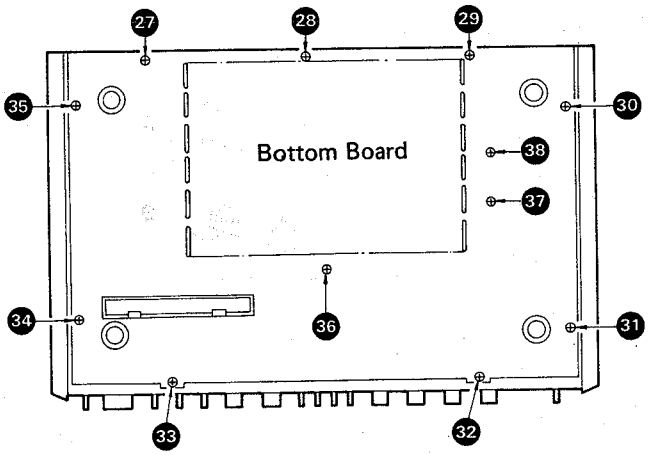



Fig. 8

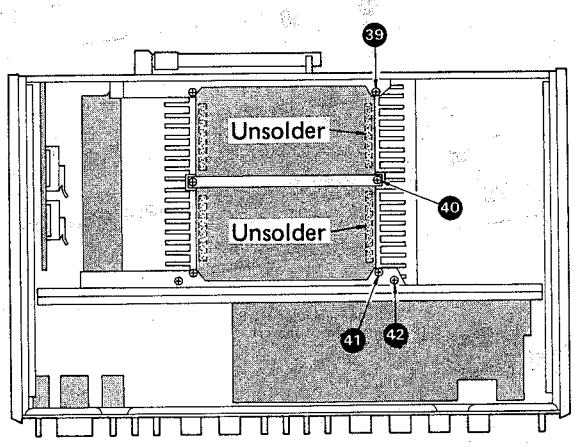



Fig. 9

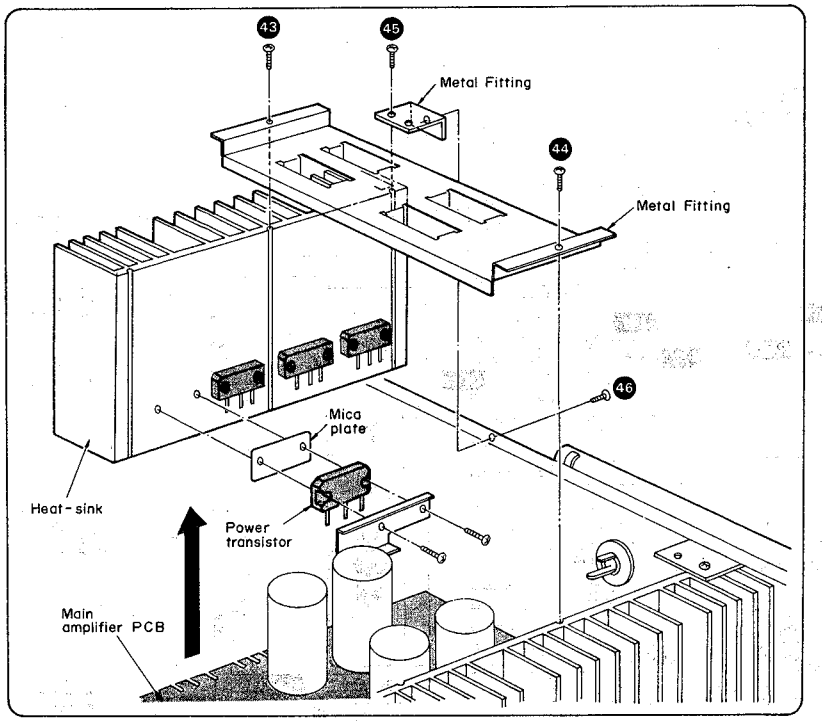



Fig. 10

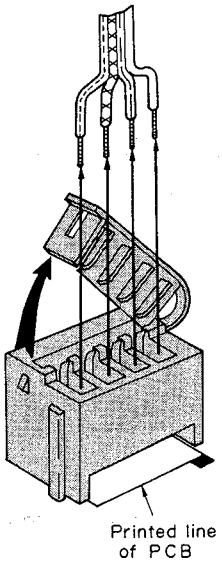



Fig. 11

- Since standardized parts are mentioned in the parts list, they are sometimes different in Part No. and Color from the product parts.

| Screw No. | Type | Color | Product Part No. | Figure No. |
|---|---|---|---|---|
| ❶ ~ ❷ | ⊕ 3 x 8mm, Tapping (With plain washer) | Black | XTW3+8HFZ | 1 |
| ❸ ~ ❺ | ⊕ 4 x 10mm, Tapping | Gold | XTB4+10F | 2 |
| ❻ ~ ❿ | ⊕ 4 x 25mm (With spring washer & plain washer) | Black | XYAS4+25001 | 2 |
| ⓫ ~ ⓯ | ⊕ 3 x 8mm, Tapping | Black | XTB3+8BFZ | 2 |
| ⓰ ~ ⓲ | ⊕ 3 x 10mm, Tapping (With plain washer) | Gold | XTW3+10H | 4, 5 |
| ⓳ ~ ⓴ | ⊕ 3 x 8mm, Tapping (With toothed lock washer) | Black | XTBS3+8BFZ1 | 5 |
| ㉑ | ⊕ 3 x 10mm, Tapping (With plain washer) | Gold | XTW3+10H | 5 |
| ㉒ ~ ㉖ | ⊕ 3 x 8mm, Tapping | Gold | XTB3+8B | 6, 7 |
| ㉗ ~ ㉘ | ⊕ 3 x 8mm, Tapping | Red | XTB3+8BFYR | 8 |
| ㉙ ~ ㉜ | ⊕ 3 x 10mm, Tapping (With plain washer) | Red | XTW3+10HFYR | 9 |
| ㉝ ~ ㉞ | ⊕ 3 x 10mm, Tapping | Black | XTB3+10BFZ | 10 |

## • To remove the remote control switch band

1. Press the band with a screw driver in the direction shown in Fig. 12.
2. Remove the band, first at point Ⓐ as shown in Fig. 13. (Care should be taken not to hold Ⓒ in Fig. 12.)
3. Then remove the band at point Ⓑ.
4. When re-attaching the band start at point Ⓑ.

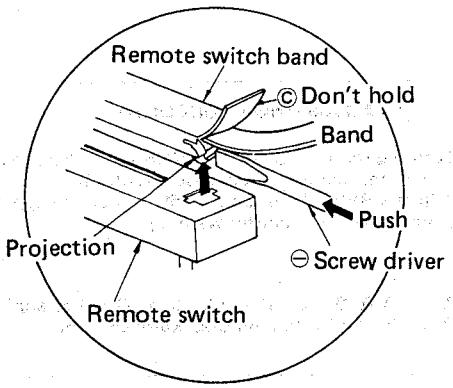



Fig. 12

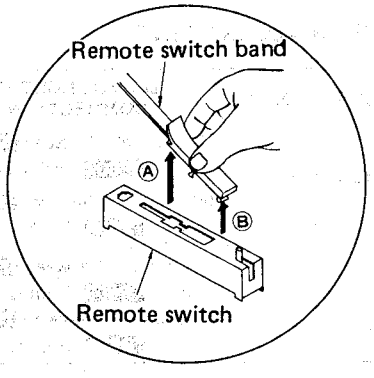
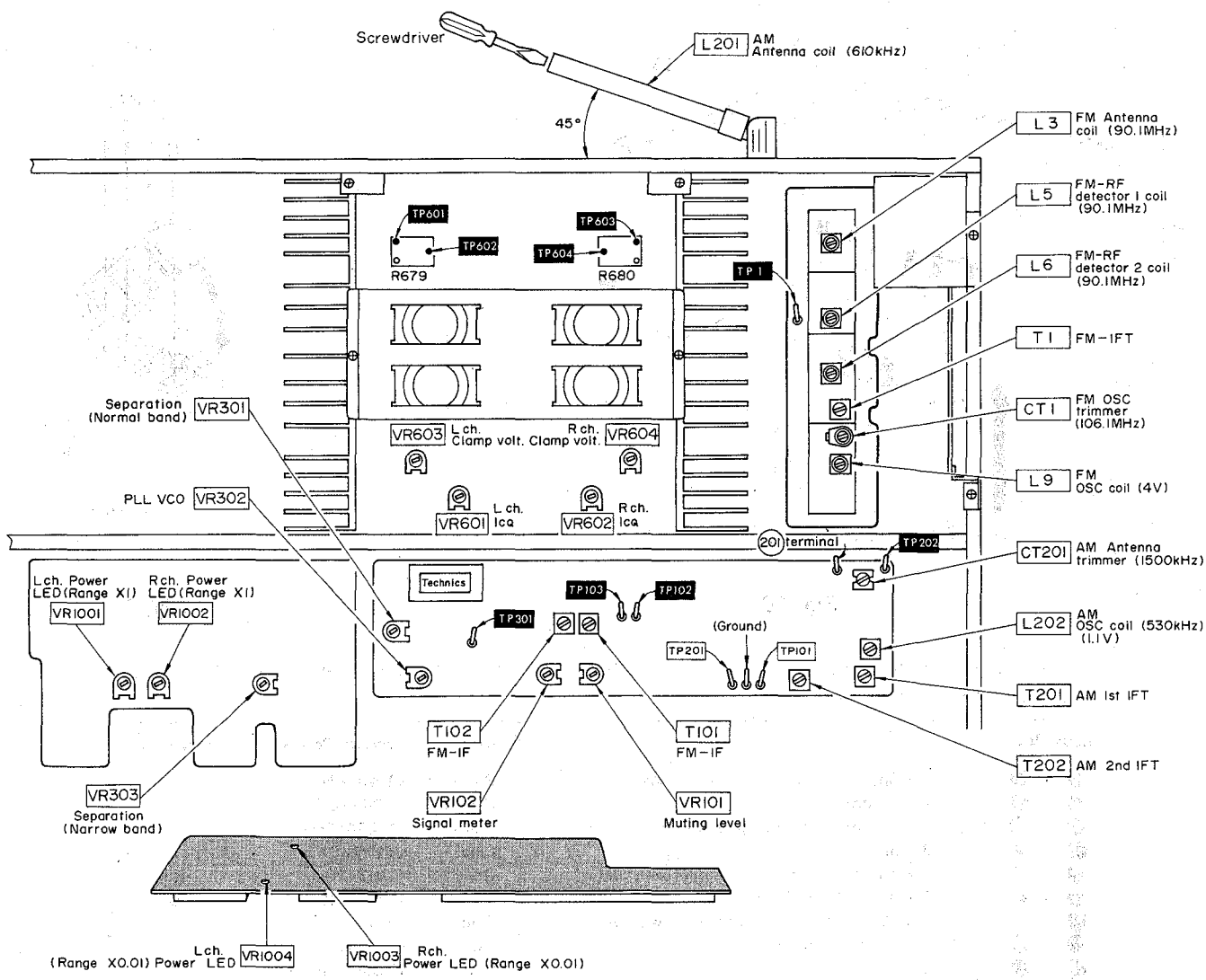



Fig. 13

## ■ ADJUSTMENT POINTS




## ■ ADJUSTING INSTRUCTIONS

- **Setting of controls and instruments to be used**

* Before the adjustment, VR601, VR602, VR603 and VR604 should be turned to counter-clockwise direction.

1. Speaker switch . . . . . .Main
2. Sound volume. . . . . .0 (minimum)
3. DC voltmeter (capable to reasure 5mV)

AMPLIFIER ADJUSTMENT

| No. | ADJUSTMENTS | DC VOLTMETER CONNECTION | PARTS ADJUSTED | ADJUSTING PROCEDURE |
|---|---|---|---|---|
| 1 | Clamp voltage | (L channel) Between TP601 and TP602 (minus probe)<br>(R channel) Between TP603 and TP604 (minus probe) | VR603 (L channel)<br>VR604 (R channel) | * Turn Icq semi-fixed resistors VR601, VR602 to minimum. (counter-clockwise direction)<br>* Adjust VR603 (L ch) and VR604 (R ch) to approx. 0.5mV after ten minutes warm-up time. |
| 2 | Icq | (L channel) Between TP601 and TP602 (minus probe)<br>(R channel) Between TP603 and TP604 (minus probe) | VR601 (L channel)<br>VR602 (R channel) | * Adjust VR601 (L ch) and VR602 (R ch) to approx. 8 ~ 12mV after ten minutes warm-up time. |

● **Setting**

* Connect a low frequency oscillator to the AUX input terminal, and 8-ohm load resistor and audio AC voltmeter to the speaker terminal.
* Add 1kHz signal from the low frequency oscillator to the set.
* Set the sound volume to the maximum point.
* Set the power display switch to "on" position.

| No. | ADJUSTMENTS | POWER DISPLAY RANGE SELECT SWITCH POSITION | PARTS ADJUSTED | ADJUSTING PROCEDURE |
|---|---|---|---|---|
| 1 | LED peak power level display | X1 | VR1001 (Left channel) | 1. Adjust the input level so that the AC voltmeter indicates 20V.<br>2. Adjust VR1001 while observing the peak power level display so that the LED at 55W is about to turn on. |
| 2 | | | VR1002 (Right channel) | Adjust VR1002 in the same way as for left channel. If the indication of left channel changes, re-adjust VR1001. |
| 3 | | X0.01 | VR1004 (Left channel) | 1. Adjust the input level so that the AC voltmeter indicates 0.1V.<br>2. Adjust VR1004 while observing the peak power level display so that the LED at 0.1W is about to turn on. |
| 4 | | | VR1003 (Right channel) | Adjust VR1003 in the same way as for left channel. If the indication of left channel changes, re-adjust VR1004. |

* Set FM/AM allocation selector to "FM 0.2MHz/AM 10kHz" position.
* Set antenna selector to "normal" position.

## AM TUNER ADJUSTMENT

*** Setting and Equipment used**

1. AC and DC electronic voltmeters (VTVM)
2. AM signal generator (AM-SG)
3. Maintain line voltage at 120 volts.
4. Output of signal generator should be no higher than necessary to obtain an output reading.
5. Adjust the antenna coil (L201) position by using a screwdriver so that it is at approximately 45 degrees to the rear panel.
6. Set input selector to "tuner" position.
7. Use a non-metal screwdriver for the adjustment.
8. Set FM·AM muting/mode switch to "off/FM mono" position.
9. Set broadcast selector to "AM" position.
10. Set tape monitor and recording mode selector to "source" position.
11. Set speaker selector to "main & remote" position.
12. Set mode switch to "stereo" position.

| Step No. | AM SIGNAL GENERATOR CONNECTION | AM SIGNAL GENERATOR FREQUENCY | DISPLAY FREQUENCY | PREPARATIONS | PARTS ADJUSTED | ADJUSTING PROCEDURE |
|---|---|---|---|---|---|---|
| | **AM-IF ADJUSTMENT** | | | | | |
| 1 | Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Powerful input) | 450kHz (30% Mod. with 400Hz | Frequency of non-interference | Connect AC VTVM or scope to "Speaker" terminals of the set. | T201 (1st IFT)<br>T202 (2nd IFT) | * Adjust the input frequency and adjustment points so that the output becomes maximum. |
| | **AM-RF ADJUSTMENT** | | | | | |
| 2 | Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Weak input) | 530kHz (30% Mod. with 400Hz) | 530kHz | Connect DC VTVM to TP202 terminal. | L202 (OSC Coil) | Adjust L202 to 1.1V ± 0.05V. |
| 3 | | 610kHz (30% Mod. with 400Hz) | 610kHz | Connect AC VTVM to scope to "Speaker" terminals of the set. | L201 (ANT Coil) | 1. Adjust for maximum output.<br>2. Adjust ferrite core of L201 by screwdriver. |
| 4 | | 1500kHz (30% Mod. with 400Hz) | 1500kHz | Connect AC VTVM to scope to "Speaker" terminals of the set. | CT201(ANT Trimmer) | 1. Adjust for maximum output.<br>2. Repeat steps (3) and (4) until the frequency correctly matches the dial display. |

## FM TUNER ADJUSTMENT

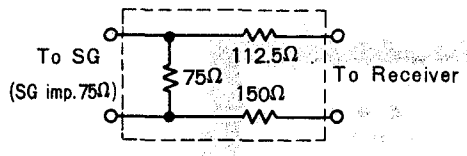
*** Equipment used**
1. FM signal generator (FM-SG)
2. Stereo modulator
3. Distortion analyser
4. Oscilloscope
5. AC and DC electronic voltmeters (VTVM).
6. Frequency counter (19kHz and 108MHz measurable).
7. FM 300Ω dummy antenna (Fig. 12).

*** Preparation of FM signal generator (FM-SG)**
1. Connect stereo modulator to FM-SG.
2. Apply SG output to antenna terminal of the set through 300Ω FM dummy antenna.
3. The standard input of the set is 60dB (1mV), 400Hz 100% modulation (Because of using dummy antenna, SG output must be 12dB plus (IHF). That is, when input is 60dB, SG output is to be 72dB.

*** Setting**
1. Set IF band selector to "normal" position.
2. Set broadcast selector to "FM" position.
3. Other setting are the same as in AM adjustment.

| Step No. | FM SIGNAL GENERATOR CONNECTION | FM SIGNAL GENERATOR FREQUENCY | DISPLAY FREQUENCY | INDICATOR | ADJUSTMENT POINTS | REMARKS |
|---|---|---|---|---|---|---|
| | **FM-IF ADJUSTMENT** | | | | | |
| 5 | – | No-Signal | Frequency of non-interference | Connect DC VTVM between TP102 and TP103 through choke coil. (Refer to Fig. 13) | T101 (Discri. IFT) | Adjust T101 core so that voltage measured in signal mode is 0V in 300mV range. |
| | **FM RF ADJUSTMENT** | | | | | |
| 6 | – | No-Signal | 87.9MHz | Connect DC VTVM to TP1 terminal. | L9 (OSC Coil) | Adjust L9 (OSC Coil) to 4.0V. |
| 7 | Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. | 90.1MHz (100% Mod. with 400Hz) weak input | 90.1MHz | Connect scope to "Speaker" terminals of the set. | L5 (RF DET Coil 1st) L6 (RF DET Coil, 2nd) L3 (ANT Coil) T1 (FM IFT) | 1. Add weak input so that noise is included in the output wave form.<br>2. Make the adjustment so that the output wave form is vertically symmetrical. Refer to Fig. 14.<br>3. Repeat the steps (7) and (8) until the frequency correctly matches the broadcasts frequency display. |
| 8 | | 106.1MHz (100% Mod. with 400Hz) | 106.1MHz | Connect scope to "Speaker" terminals of the set. | CT1 (OSC Trimmer) | |
| | **FM MONO DISTORTION ADJUSTMENT** | | | | | |
| 9 | Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. (Apply 60dB to antenna terminal) | 100.1MHz (100% Mod. with 400Hz) | 100.1MHz | Connect distortion analyser to "Speaker" terminals of the set. | T101, T102 (Discri. IFT) | 1. Set the FM muting/FM mode switch to "on/auto" and then check step (5) in no signal mode.<br>2. If it is deflected, readjust of T101.<br>3. Adjust T102 core so that distortion of right and left channels are minimized. |
| | **FM MUTING LEVEL ADJUSTMENT** | | | | | |
| 10 | Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. (Apply 16dB to antenna terminal) | 100.1MHz (100% Mod. with 400Hz) | 100.1MHz | Connect AC VTVM or scope to "Speaker" terminals of the set. | VR101(Muting level) | 1. Set the FM muting/FM mode switch to "off/mono".<br>2. With the FM muting/FM mode switch set to "on/auto", adjust VR101 so that the output is given with muting condition released. |
| | **SIGNAL METER LED (Light Emitting diode) INDICATOR ADJUSTMENT** | | | | | |
| 11 | Connect FM-SG to FM antenna terminal through 300Ω FM dummy antanna. (Apply 45dB to antenna terminal) | 100.1MHz (100% Mod. with 400Hz) | 100.1MHz | Signal meter LED | VR102 (Meter level) | Adjust VR102 while observing the signal meter LED so that the indicator at 5th is about to turn on. |
| | **FM MPX PILOT (VCO) ADJUSTMENT** | | | | | |
| 12 | Connect FM-SG to FM antenna terminal through 300 ⍼ FM dummy antenna. (Monaural signal) | 100.1MHz (Non-modulated) | 100.1MHz | Connect frequency counter to TP301 terminal. | VR302 (VCO) | 1. Set the FM muting/FM mode switch to "on/auto".<br>2. Adjust VR302 to 19kHz ± 30Hz. |

| Step No. | FM SIGNAL GENERATOR CONNECTION | FM SIGNAL GENERATOR FREQUENCY | DISPLAY FREQUENCY | INDICATOR | ADJUSTMENT POINTS | REMARKS |
|---|---|---|---|---|---|---|
| | **STEREO DISTORTION ADJUSTMENT** | | | | | |
| 13 | Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. (Pilot 10% Mod. stereo signal) | 100.1MHz (100% Mod. with 400Hz (L mode) | 100.1MHz | Connect distortion analyser to "Speaker" terminals of the set. | T1 (IFT) | 1. Set the FM muting/FM mode switch to "on/auto". 2. Re-adjust the already adjusted T1 within ± 90° from the preset core position so that the distortion of L ch is minimized. 3. Re-check the steps 5, 9 and 10. |
| | **SEPARATION ADJUSTMENT** (Normal IF band) | | | | | |
| 14 | Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. (Pilot 10% Mod. stereo signal) | 100.1MHz (100% Mod. with 1kHz) (L or R mode) | 100.1MHz | Connect AC VTVM to "Speaker" terminals of the set. | VR301 (Normal IF separation) | 1. Set the IF band selector to "normal". 2. Set the FM muting/FM mode switch to "on/auto". 3. Adjust VR301 so that R output is minimized when stereo modulator is in L (L ch. modulation) mode and that L output is minimized in R mode. |
| | **SEPARATION ADJUSTMENT** (Narrow IF band) | | | | | |
| 15 | Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. (Pilot 10% Mod. stereo signal) | 100.1MHz (100% Mod. with 1kHz) (L or R mode) | 100.1MHz | Connect AC VTVM to "Speaker" terminals of the set. | VR303 (Narrow IF separation) | 1. Set the IF band selector to "narrow". 2. Set the FM muting/FM mode switch to "on/auto". 3. Adjust VR303 so that R output is minimized when stereo modulator is in L (L ch. modulation) mode and that L output is minimized in R mode. |




300Ω FM Dummy Antenna

Fig. 12

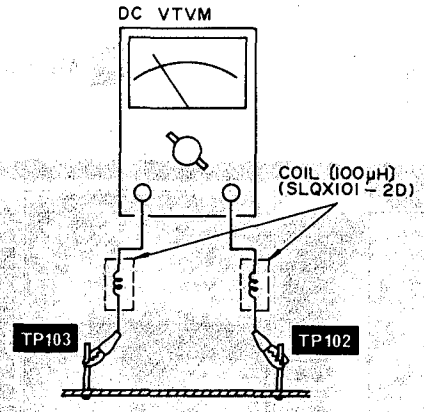
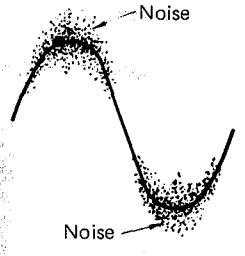


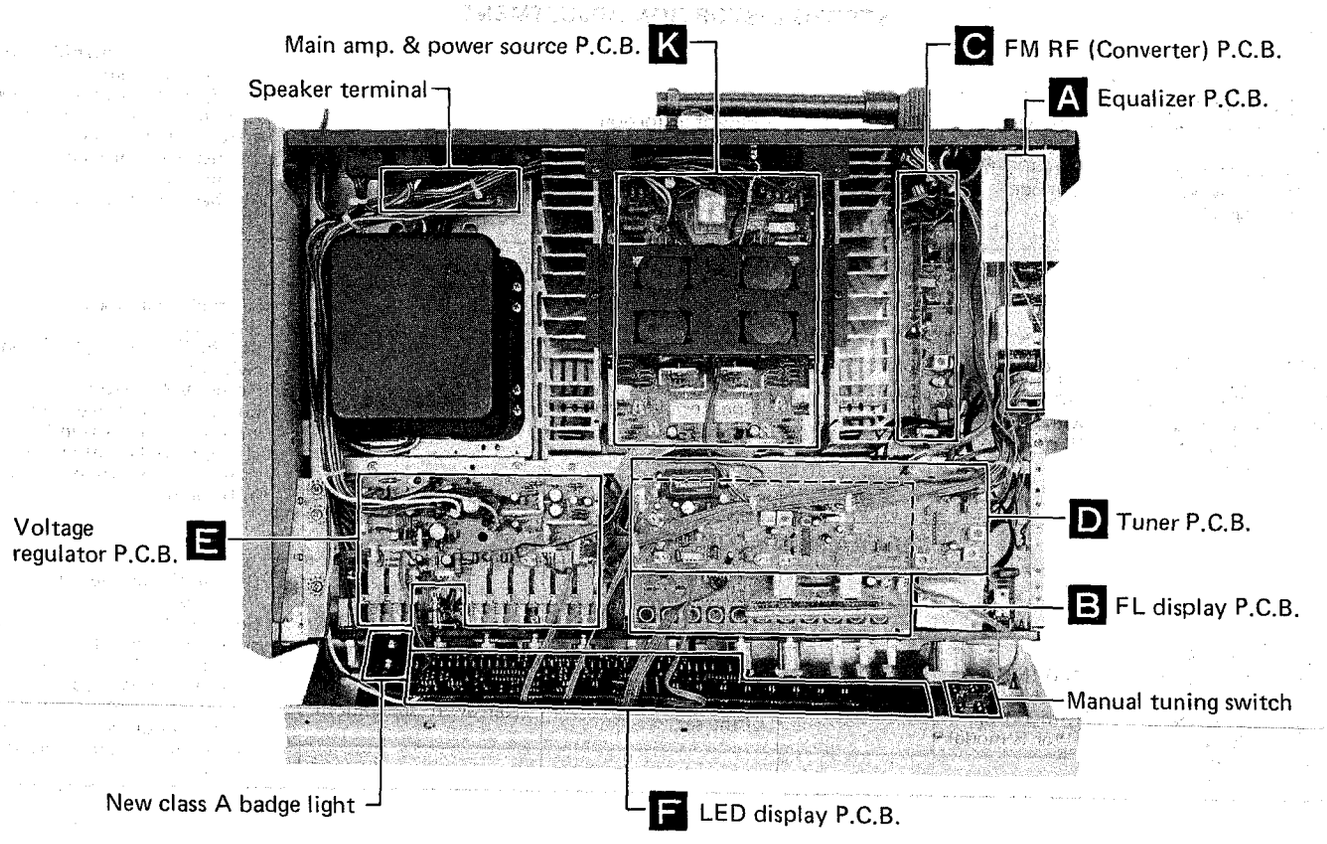

Fig. 13

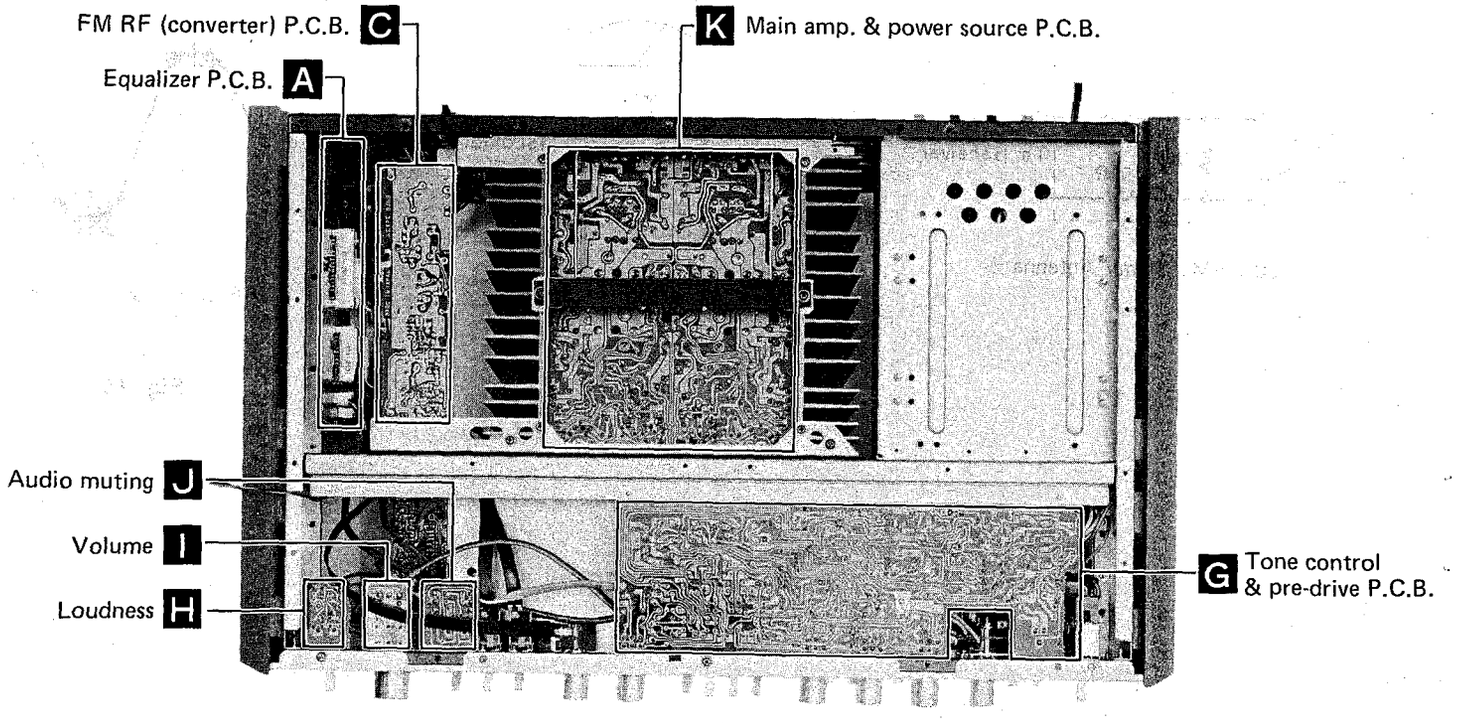



AF output wave form

Fig. 14

## ■ LOCATION OF P.C.B.


Main amp. & power source P.C.B. K
C FM RF (Converter) P.C.B.
Speaker terminal
A Equalizer P.C.B.
Voltage regulator P.C.B. E
D Tuner P.C.B.
B FL display P.C.B.
Manual tuning switch
New class A badge light
F LED display P.C.B.

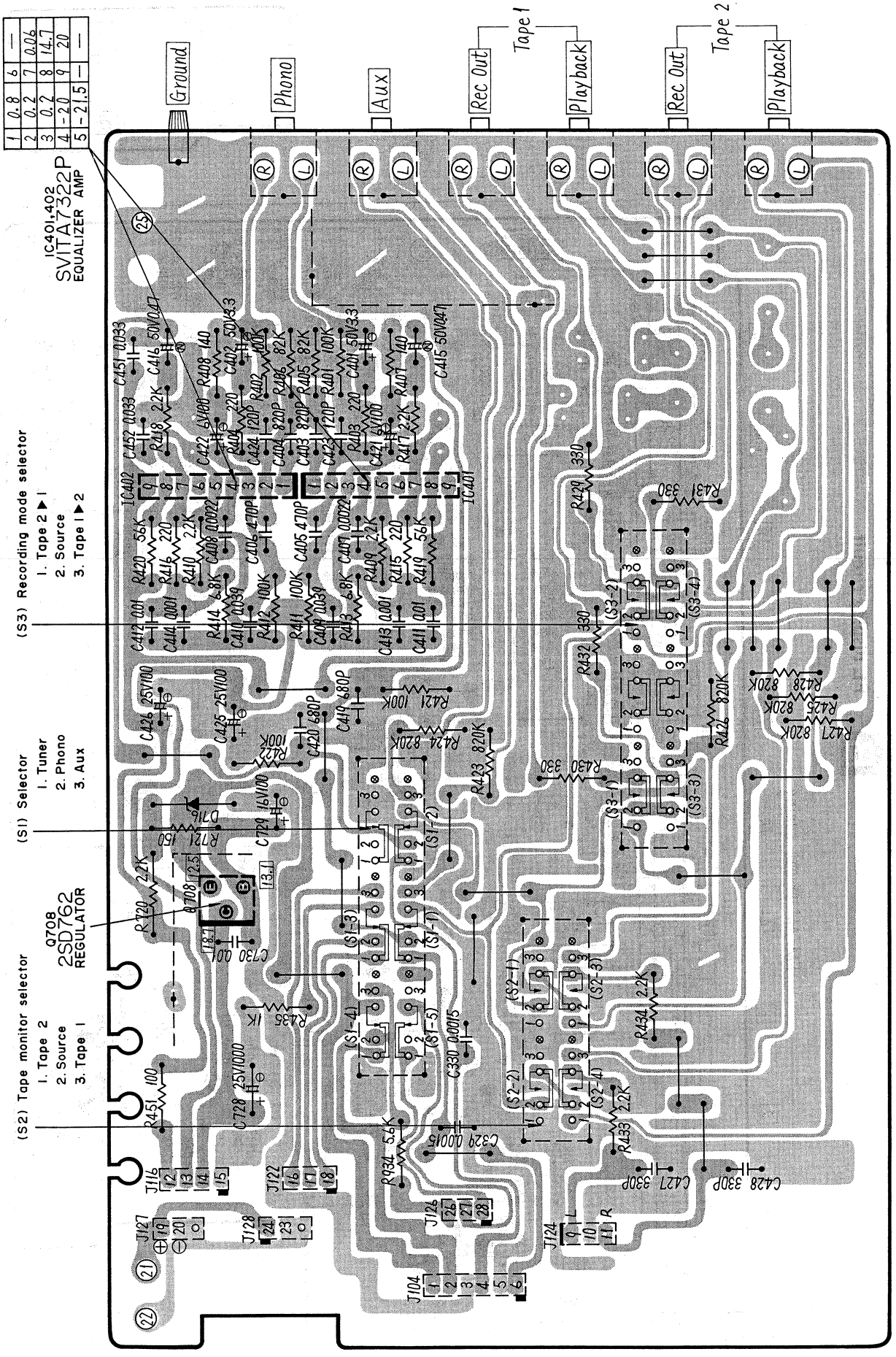

FM RF (converter) P.C.B. C
K Main amp. & power source P.C.B.
Equalizer P.C.B. A
Audio muting J
Volume I
Loudness H
G Tone control & pre-drive P.C.B.

Bottom view

## ■ PRINTED CIRCUIT BOARDS

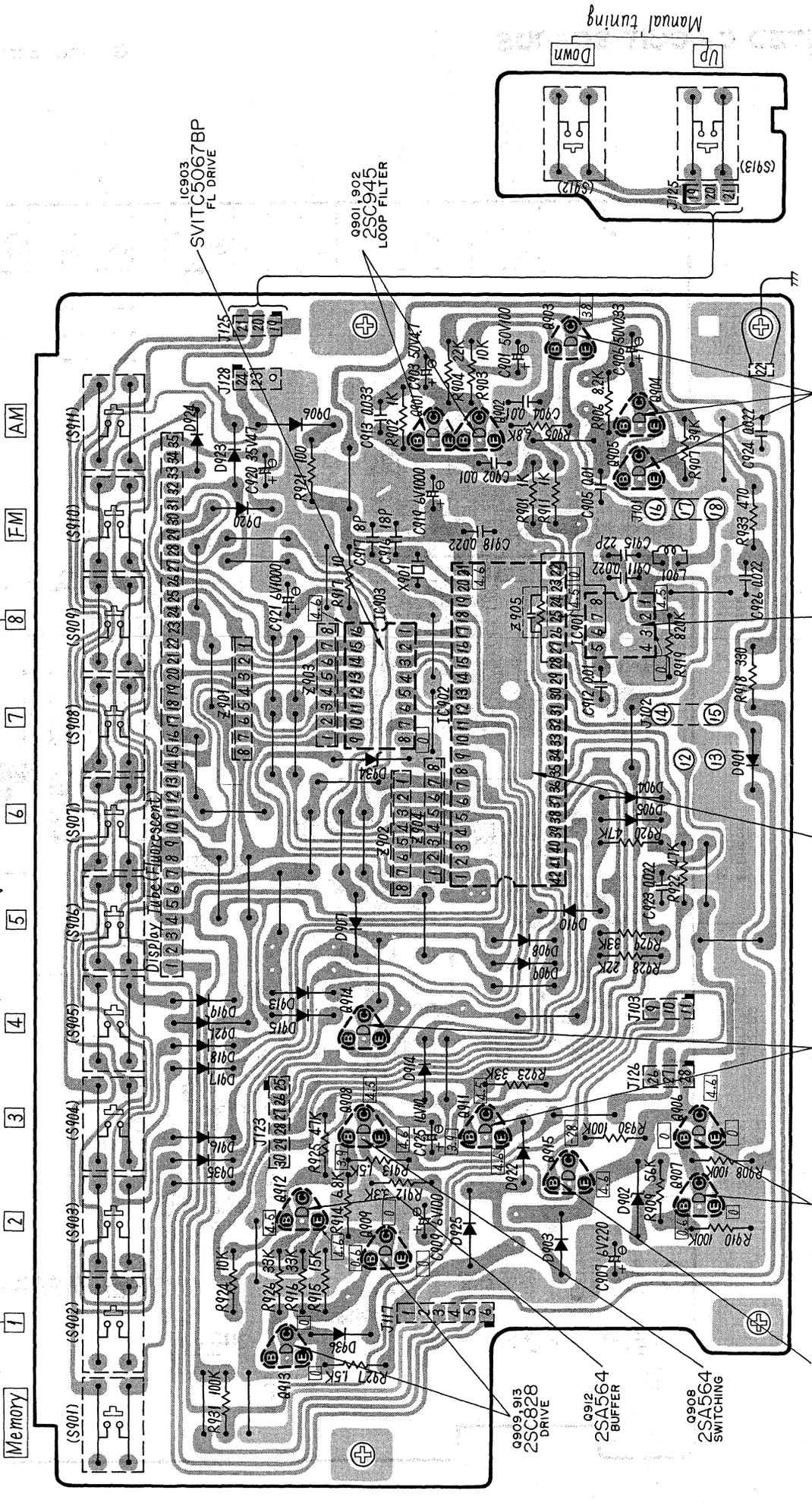
Ground (Earth) lines

A Equalizer circuit

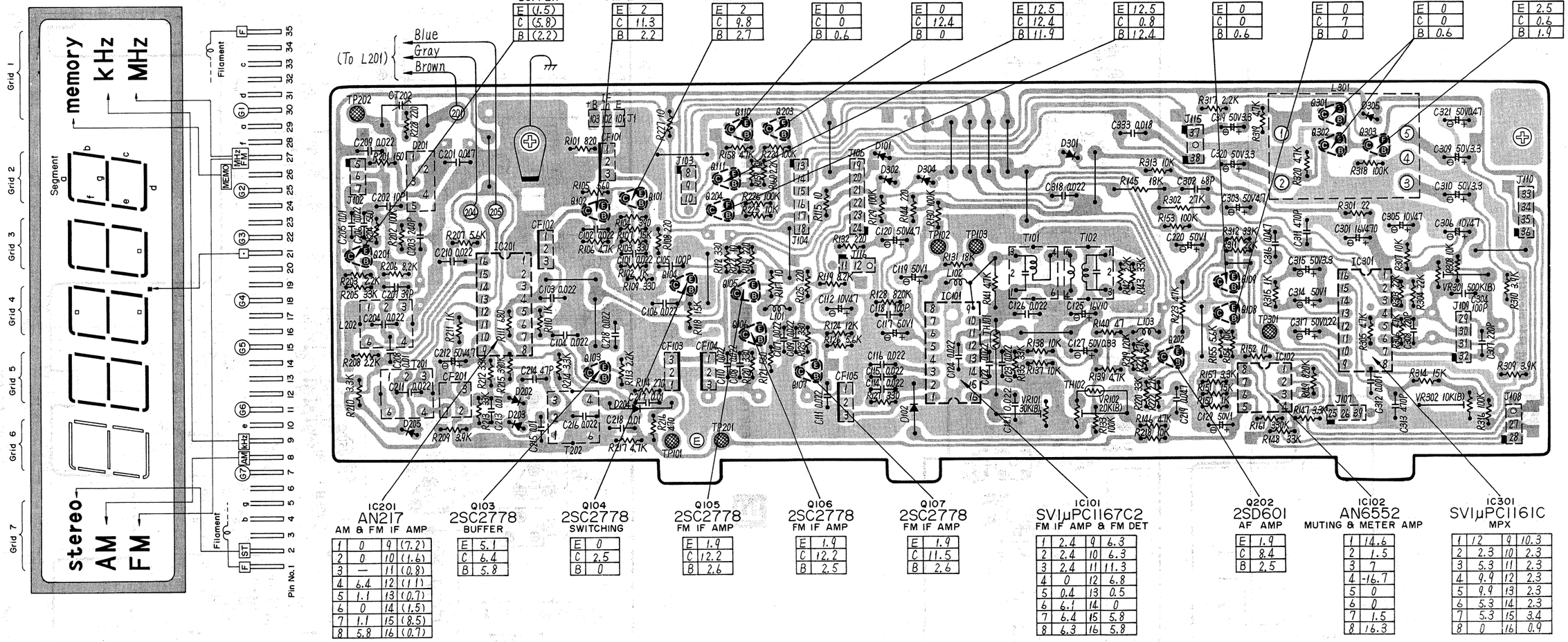



| | | | |
|---|---|---|---|
| 1 | 0.8 | 6 | — |
| 2 | 0.2 | 7 | 0.06 |
| 3 | 0.2 | 8 | 14.7 |
| 4 | -2.0 | 9 | 20 |
| 5 | -21.5 | — | — |

**B** **FL display circuit**

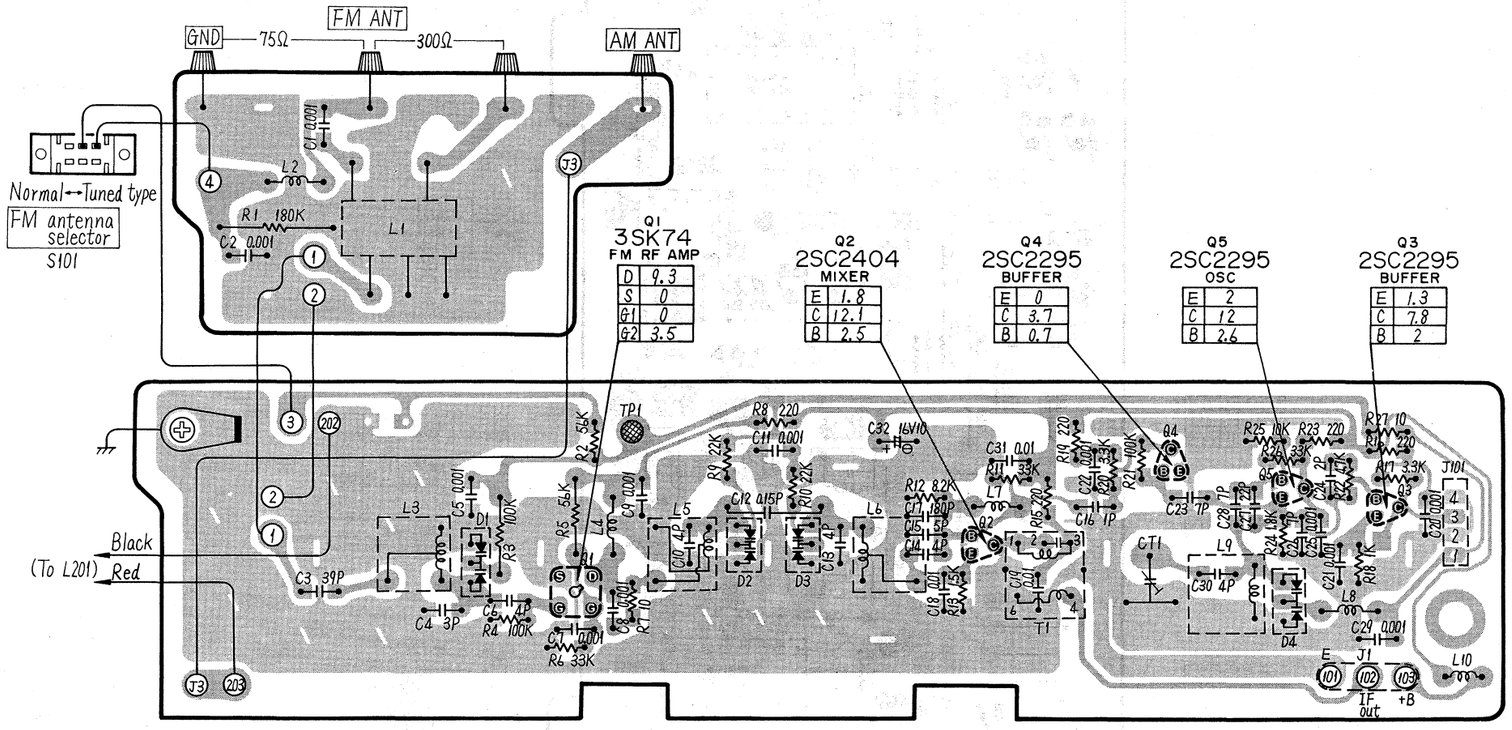


## D Tuner circuit

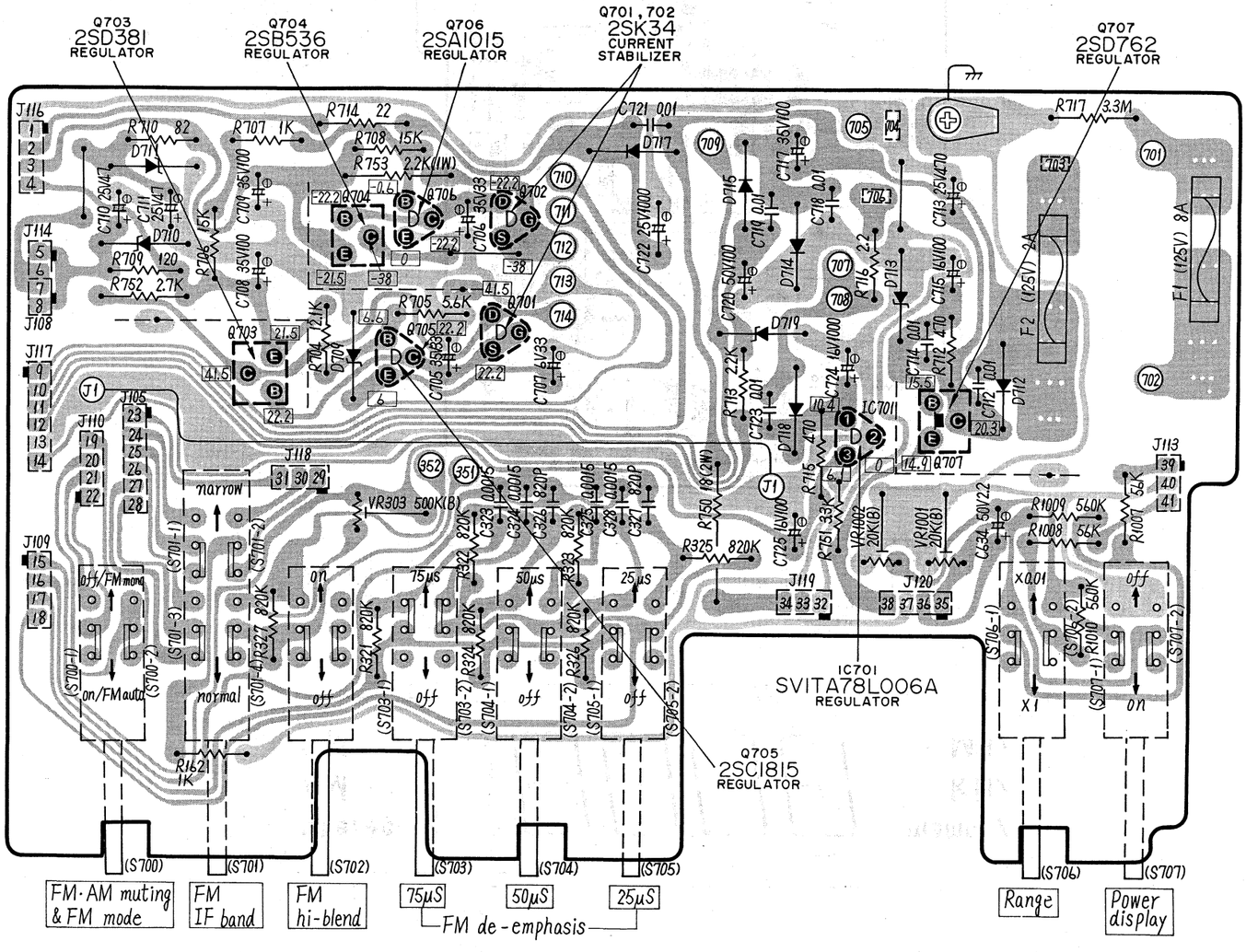



## • Fluorescent Display Tube (FL)

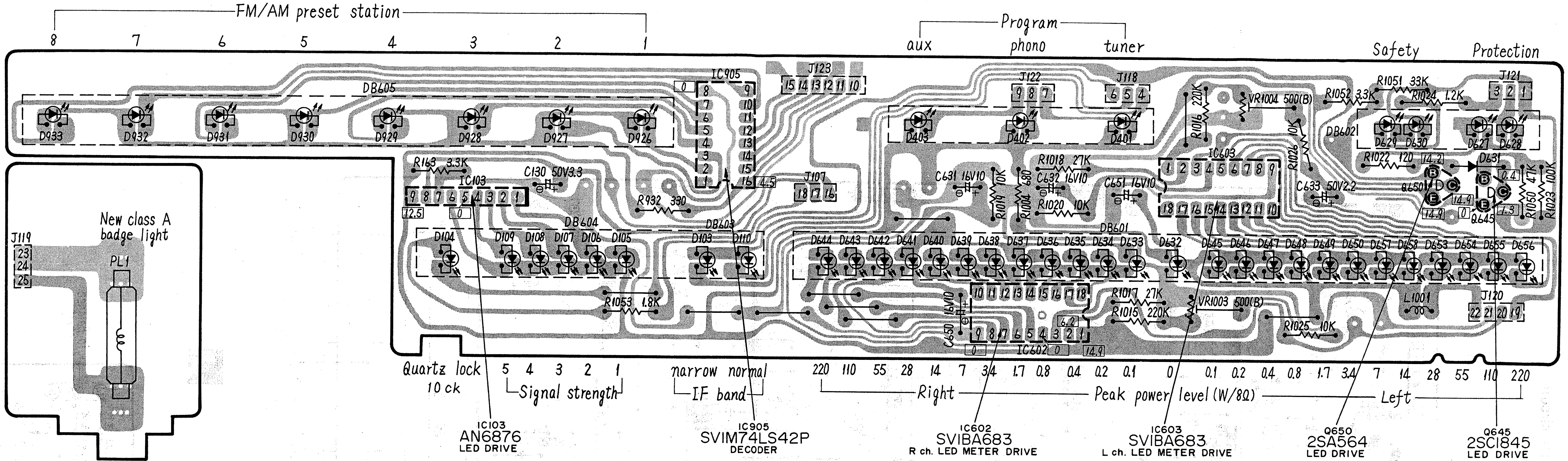
## C FM RF circuit




## E Voltage regulator circuit for tuner and pre-amplifier



## F
**LED display circuit**


FM/AM preset station
8 7 6 5 4 3 2 1
Program
aux phono tuner
Safety Protection
New class A badge light
PL1
J119
DB605
D933 D932 D931 D930 D929 D928 D927 D926
IC905
J123
J122
J118
J121
D403 D402 D401
DB602
D629 D630 D627 D628
R163 3.3K
IC103
C130 50V3.3
R932 330
J107
C631 16V10
C632 16V10
C651 16V10
R1018 27K
R1020 10K
IC603
R1016 220K
VR1004 500(B)
R1026 10K
C633 50V2.2
R1052 3.3K
R1051 33K
R1024 1.2K
R1022 120
D631
Q650
Q645
R1050 47K
R1023 100K
DB604
D104 D109 D108 D107 D106 D105
DB603
D103 D110
DB601
D644 D643 D642 D641 D640 D639 D638 D637 D636 D635 D634 D633 D632 D645 D646 D647 D648 D649 D650 D651 D658 D653 D654 D655 D656
R1053 1.8K
C650 16V10
IC602
R1017 27K
R1015 220K
VR1003 500(B)
R1025 10K
L1001
J120
Quartz lock 10 ck
5 4 3 2 1
Signal strength
narrow normal
IF band
220 110 55 28 14 7 3.4 1.7 0.8 0.4 0.2 0.1 0 0.1 0.2 0.4 0.8 1.7 3.4 7 14 28 55 110 220
Right Peak power level (W/8Ω) Left
IC103 AN6876 LED DRIVE
IC905 SVIM74LS42P DECODER
IC602 SVIBA683 R ch. LED METER DRIVE
IC603 SVIBA683 L ch. LED METER DRIVE
Q650 2SA564 LED DRIVE
Q645 2SC1845 LED DRIVE

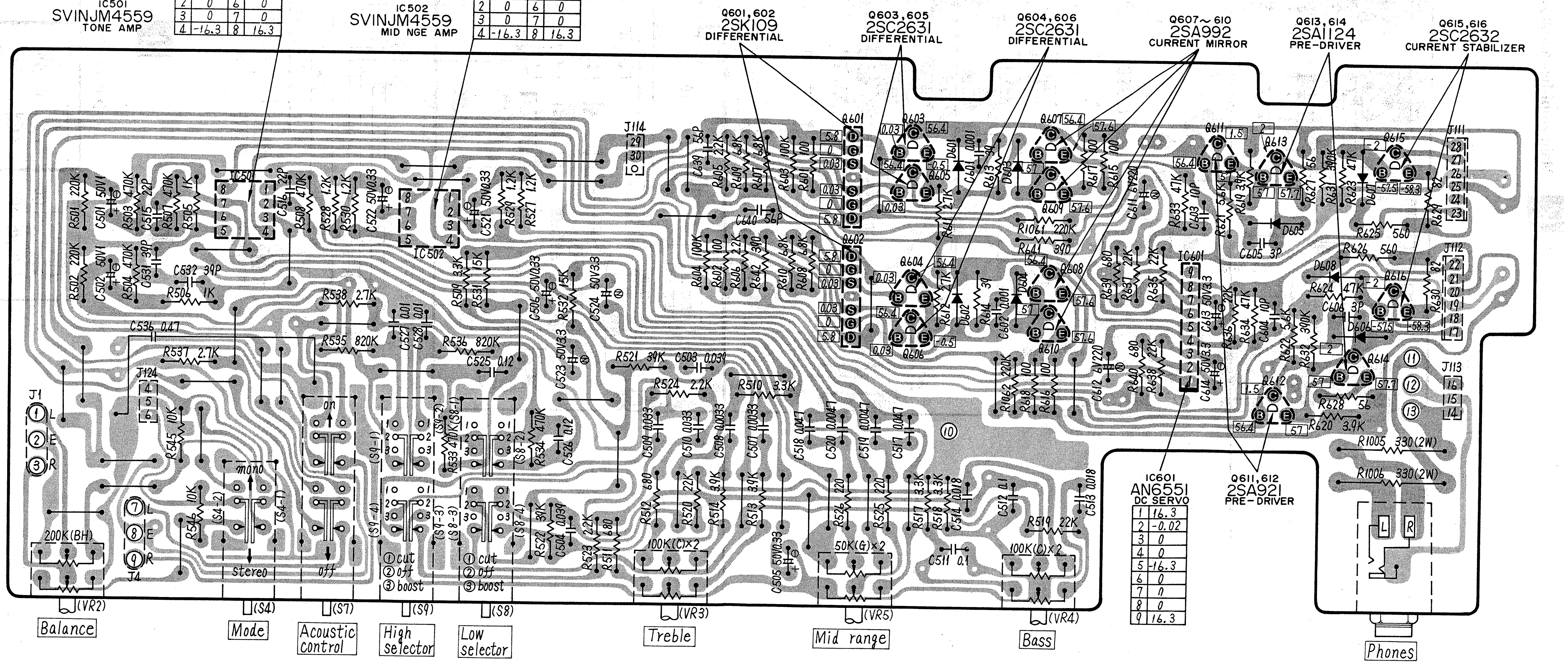
## G
**Tone control and pre-drive circuit**

IC501 SVINJM4559 TONE AMP

| | | | |
|---|---|---|---|
| 1 | 0 | 5 | 0 |
| 2 | 0 | 6 | 0 |
| 3 | 0 | 7 | 0 |
| 4 | -16.3 | 8 | 16.3 |

IC502 SVINJM4559 MID NGE AMP

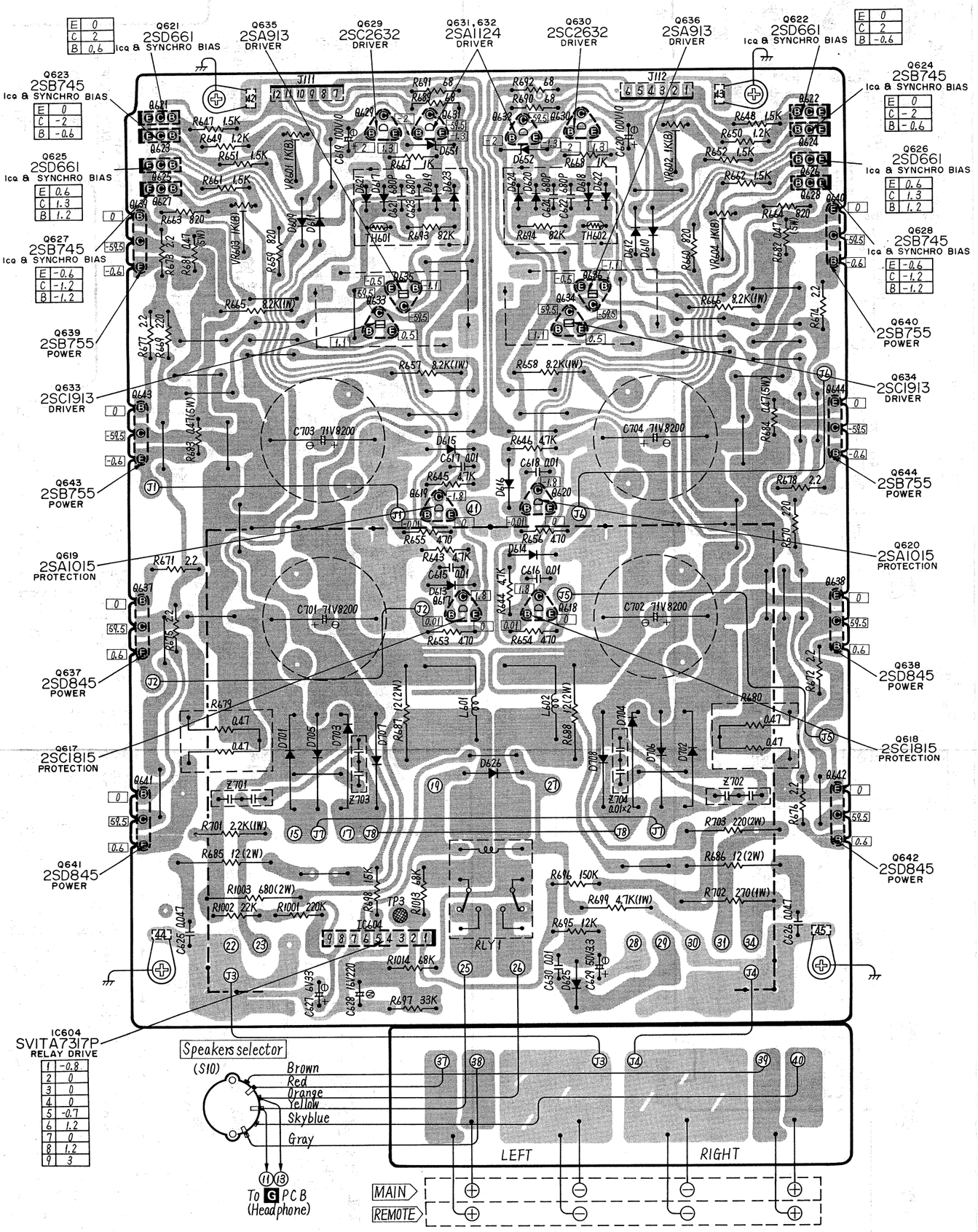
| | | | |
|---|---|---|---|
| 1 | 0 | 5 | 0 |
| 2 | 0 | 6 | 0 |
| 3 | 0 | 7 | 0 |
| 4 | -16.3 | 8 | 16.3 |


Q601,602 2SK109 DIFFERENTIAL
Q603,605 2SC2631 DIFFERENTIAL
Q604,606 2SC2631 DIFFERENTIAL
Q607～610 2SA992 CURRENT MIRROR
Q613,614 2SA1124 PRE-DRIVER
Q615,616 2SC2632 CURRENT STABILIZER
J114
J111
J112
J113
J124
J1
J4
IC501
IC502
IC601
Q601 Q602 Q603 Q604 Q605 Q606 Q607 Q608 Q609 Q610 Q611 Q612 Q613 Q614 Q615 Q616
R536 820K
R535 820K
R538 2.7K
R537 2.7K
C536 0.47
C532 39P
R506 1K
R521 39K
C503 0.039
R524 2.2K
R510 3.3K
C640 56P
R1061 220K
R641 390
R625 560
R626 560
R624 47K
C605 3P
C606 3P
D605 D606 D607 D608
R628 56
R620 3.9K
R1005 330(2W)
R1006 330(2W)
R519 22K
C511 0.1
200K(BH)
100K(C)×2
50K(G)×2
mono stereo on off
① cut ② off ③ boost
(VR2) (S4) (S7) (S9) (S8) (VR3) (VR5) (VR4)
Balance
Mode
Acoustic control
High selector
Low selector
Treble
Mid range
Bass
Phones
Q611,612 2SA921 PRE-DRIVER
IC601 AN6551 DC SERVO

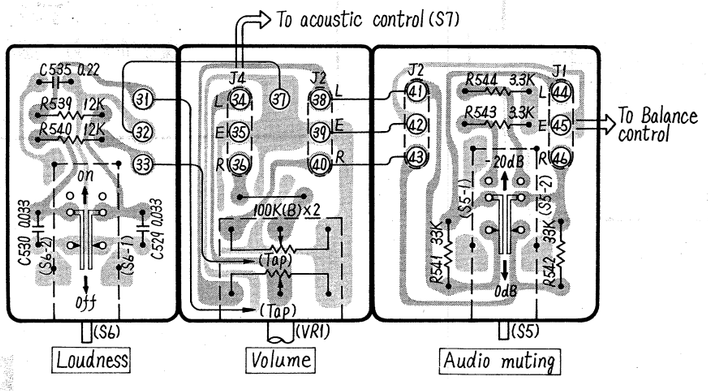
IC601 AN6551 DC SERVO

| | |
|---|---|
| 1 | 16.3 |
| 2 | -0.02 |
| 3 | 0 |
| 4 | 0 |
| 5 | -16.3 |
| 6 | 0 |
| 7 | 0 |
| 8 | 0 |
| 9 | 16.3 |

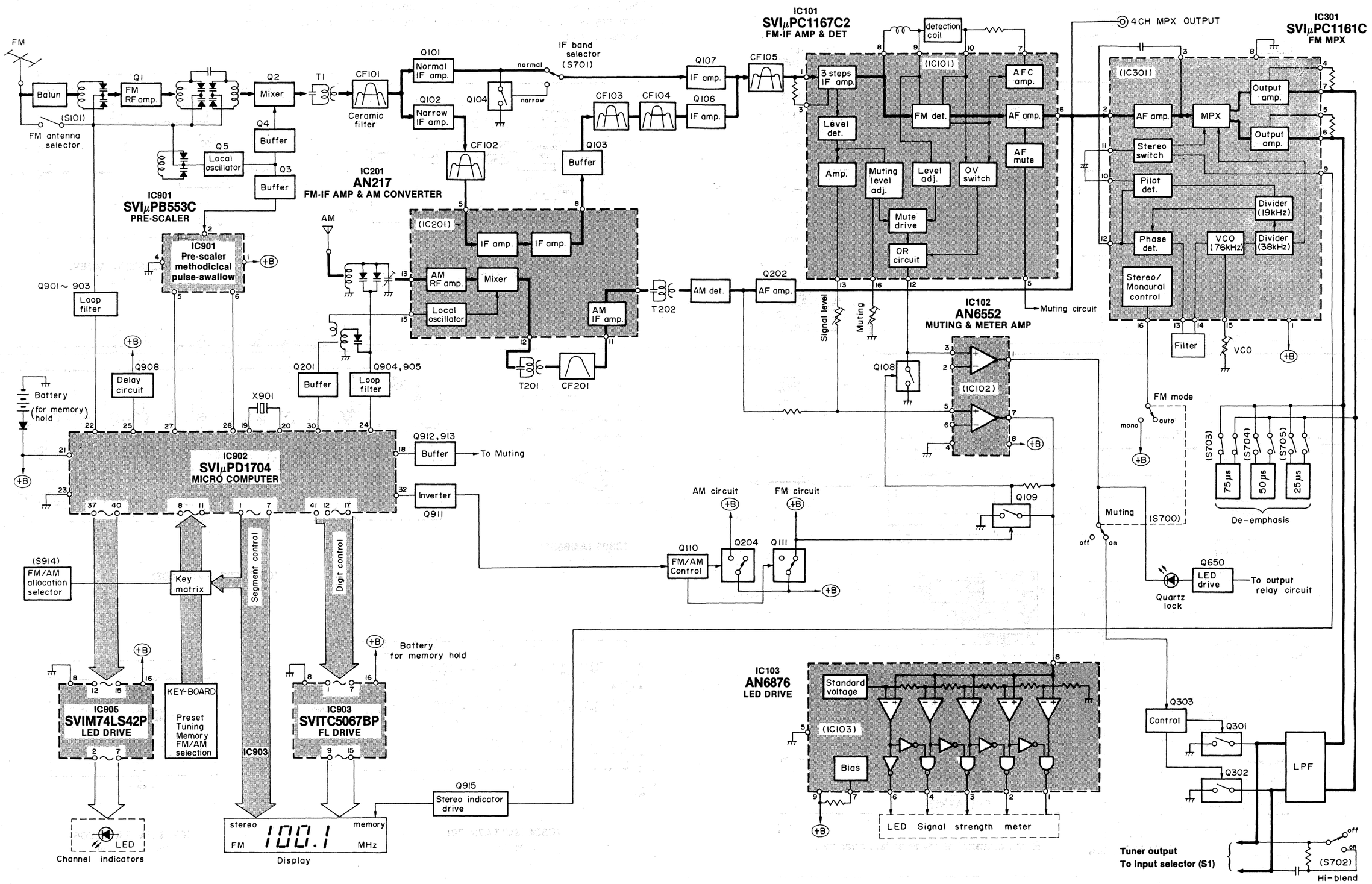
## K Main amplifier and power source circuit



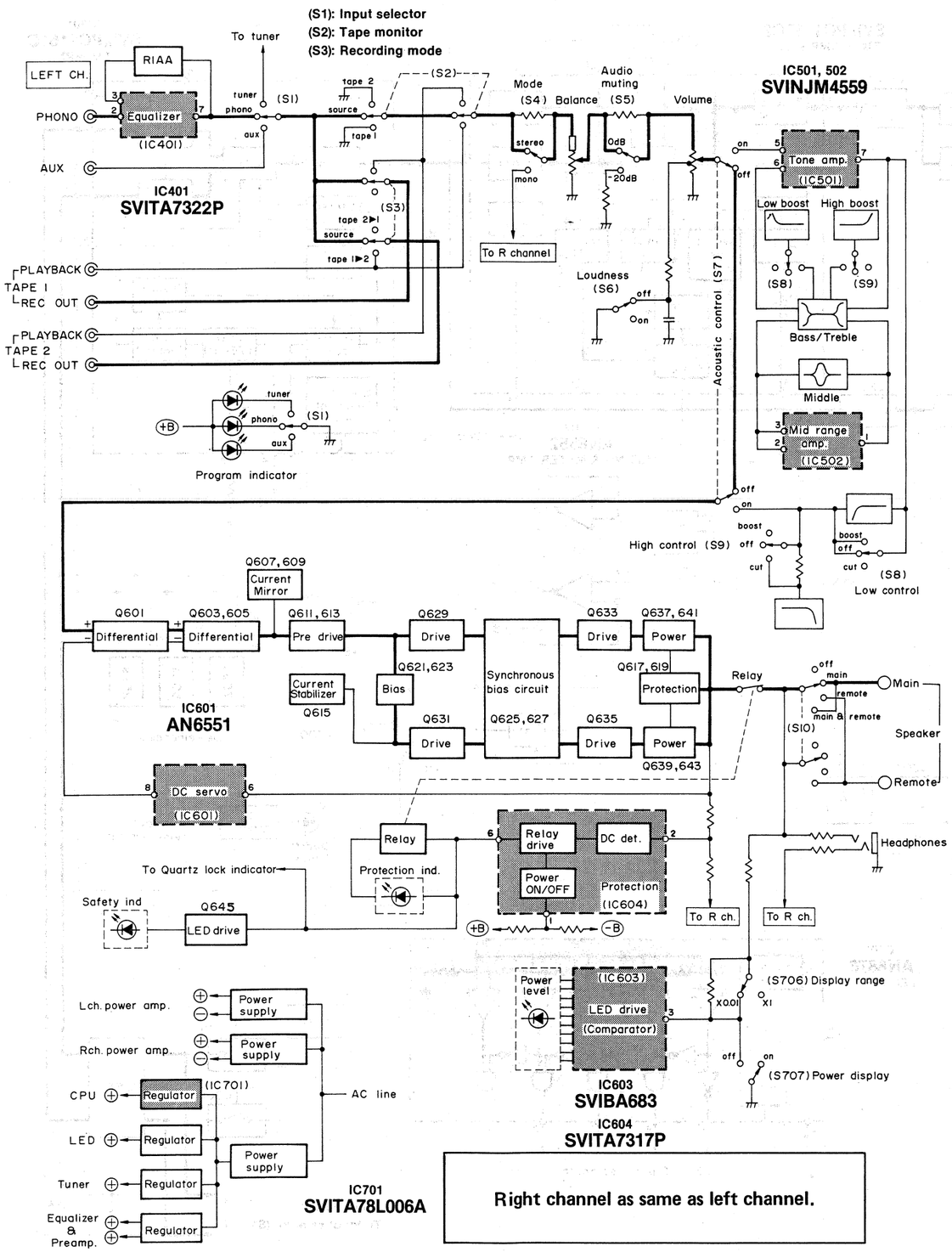

## H I J



## ■ BLOCK DIAGRAM (Tuner and FL Display)



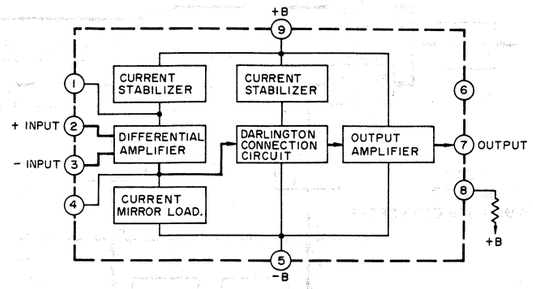
## ■ BLOCK DIAGRAM (Amplifier and Tone control)



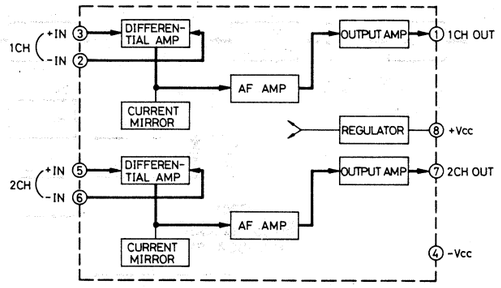

**Right channel as same as left channel.**

## ■ BLOCK DIAGRAM OF IC'S

This is the basic block diagram of the inside circuit of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.



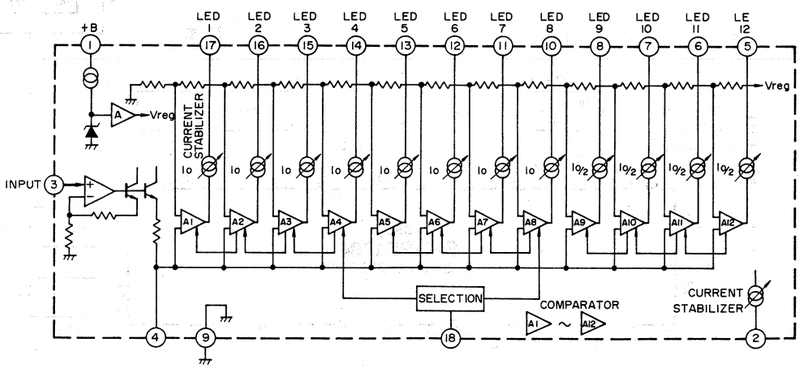

**IC401, 402 (SVITA7322P)**
Equalizer amp.



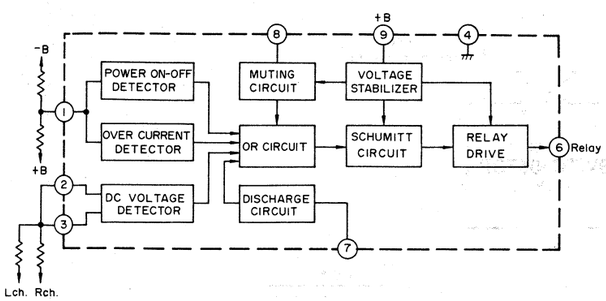

**IC501, 502 (SVINJM4559)**
Tone & mid. range amp.



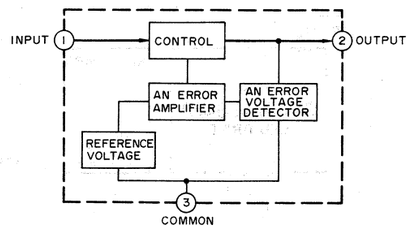

**IC601 (AN6551)**
DC servo




**IC602, 603 (SVIBA683)**
LED power meter drive




**IC604 (SVITA7317P)**
Relay drive




**IC701 (SVITA78L006A)**
Voltage regulator





Printed in Japan

## ■ HOW TO REPLACE

### (RESISTOR, CAPACITO

1. Remove solder from chip by
2. Remove chip with tweezers ing solder as shown in fig. 1.
3. Solder circuit board first a direction of the arrow as sho

**Notes:**

1. Do not use chip again whic circuit board.
2. Use lead wire with insulator chip jumper.

| Color | |
|---|---|
| Black | Ch |
| Brown, White or Green | |



## ■ REPLACEMENT PARTS LIST..... Electrical Parts

**Notes:** 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

**Areas**

* [M] is available in U.S.A.
* [MC] is available in Canada.

| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| **INTEGRATED CIRCUITS** | | | |
| IC101 | | SVIUPC1167C2 | IC, FM IF Amp. & FM Detector |
| IC102 | | AN6552F | IC, Muting & LED Meter Amplifier |
| IC103 | | AN6876 | IC, LED Driver |
| IC201 | | AN217P–BB | IC, AM & FM IF Amplifier |
| IC301 | | SVIUPC1161C | IC, FM Multiplex |
| IC401, 402 | | SVITA7322P | IC, Equalizer Amplifier |
| IC501, 502 | | SVINJM4559DS | IC, Tone & Mid Range Amplifier |
| IC601 | | AN6551 | IC, DC Servo |
| IC602, 603 | | SVIBA683 | IC, LED Power Meter Driver |
| IC604 | | SVITA7317P | IC, Relay Driver |
| IC701 | | SVITA78L006A | IC, Voltage Regulator |
| IC901 | | SVIUPB553C–E | IC, Pre-Scaler |
| IC902 | | SVIUPD1704CL | IC, Micro-Computer |
| IC903 | | SVITC5067BP | IC, FL Driver |
| IC905 | | SVIM74LS42P | IC, Decoder |
| **TRANSISTORS** | | | |
| Q1 | | 3SK74–L1 | Transistor, FM RF Amplifier [FET] |
| Q2 | | 2SC2404 | Transistor, FM Mixer (Chip) |
| Q3, 4, 5 | | 2SC2295 | Transistor, Buffer & FM Oscillator (Chip) |
| Q101, 102, 103 104, 105, 106 107, 201 | | 2SC2778 | Transistor, FM IF Amplifier, Buffer & Switching (Chip) |
| Q108, 109, 110, 202, 203 | | 2SD601 | Transistor, Switching & AF Amplifier (Chip) |
| Q111, 204, 303 | | 2SB709 | Transistor, Switching (Chip) |
| Q301, 302 | | 2SD601 | Transistor, Mute Switching (Chip) |
| Q601, 602 | | 2SK109–D | Transistor, Differential Amplifier [FET] (Use in ranks D or E) |
| Q603, 604, 605 606 | | 2SC2631–R | Transistor, Differential Amplifier (Use in ranks Q, R or S) |
| Q607, 608, 609, 610 | | 2SA992 | Transistor, Current Mirror |
| Q611, 612 | | 2SA921–T | Transistor, Pre-Driver (Use in ranks R, S or T) |
| Q613, 614 | | 2SA1124–R | Transistor, Pre-Driver (Use in ranks R or S) |
| Q615, 616 | | 2SC2632–R | Transistor, Current Stabilizer (Use in ranks R or S) |
| Q617, 618 | | 2SC1815–Y | Transistor, Protection (Use in ranks Y or O) |
| Q619, 620 | | 2SA1015–Y | Transistor, Protection (Use in ranks Y or O) |
| Q621, 622, 625, 626 | | 2SD661–S | Transistor, Ico & Synchronous Bias (Use in ranks R or S) |
| Q623, 624, 627, 628 | | 2SB745–S | Transistor, Ico & Synchronous Bias (Use in ranks R or S) |
| Q629, 630 | | 2SC2632–R | Transistor, Driver (Use in ranks R or S) |
| Q631, 632 | | 2SA1124–R | Transistor, Driver (Use in ranks R or S) (Use pair ranks as same as Q629 ~ 631 and Q632) |
| Q633, 634 | | 2SC1913–R | Transistor, Driver (Use in ranks R or Q) |
| Q635, 636 | | 2SA913–R | Transistor, Driver (Use in ranks R or Q) (Use pair ranks as same as Q633 ~ 635 and Q636) |
| Q637, 641 | | 2SD845–R | Transistor, Power (Use in ranks R or O) |
| Q639, 643 | | 2SB755–R | Transistor, Power (Use in ranks R or O) (Use pair ranks as same as Q637, 639, 641 and Q643) |
| Q638, 642 | | 2SD845–R | Transistor, Power (Use in ranks R or O) |
| Q640, 644 | | 2SB755–R | Transistor, Power (Use in ranks R or O) (Use pair ranks as same as Q638, 640, 642 and Q644) |
| Q645 | | 2SC1845 | Transistor, LED Driver |
| Q650 | | **2SA666AI–R** | Transistor, LED Driver |
| Q701, 702 | | 2SK34–D1 | Transistor, Current Stabilizer [FET] |
| Q703 | | 2SD381A–L9 | Transistor, Regulator |
| Q704 | | 2SB536A–L9 | Transistor, Regulator |
| Q705 | | 2SC1815–Y | Transistor, Regulator (Use in ranks Y or O) |
| Q706 | | 2SA1015–Y | Transistor, Regulator (Use in ranks Y or O) |
| Q707, 708 | | 2SD762–O | Transistor, Regulator (Use in ranks O or P) |
| Q901, 902, 903 904, 905 | | **2SC945–P2** | Transistor, Loop Filter |
| Q906, 907 | | 2SC1684–R | Transistor, Switching |
| Q908, 911, 912 914, 915 | | **2SA666AI–R** | Transistor, Switching & Buffer |
| Q909, 913 | | **2SC1328–T** | Transistor, Driver |
| **DIODES** | | | |
| D1, 2, 3, 4 | | SVDBB204 | Diode, Variable Capacitor (for FM) |
| D101, 203, 205, 302, 304, 305 | | MA151K | Diode, AGC & Switching |
| D102 | | **MA162A** | Diode |
| D201 | | SVDBB113 | Diode, Variable Capacitor (for AM) |
| D202, 301 | | **MA162A** | Diode, AGC & Switching (Product Part No. : MA151A) |
| D103~107, 110 401, 402, 403 627, 628, 641 642, 643, 644 653 ~ 656, 926 ~ 933 | | LN217RP | Light Emitting Diode, Red |
| D108, 109, 629, 630, 632, 633 ~ 636, 645 ~ 648 | | LN317GP | Light Emitting Diode, Green |
| D204, 906 | | **2–0A99** | Diode, AM Detector |
| D607, 608 | | MA27B | Diode, Current Stabilizer |
| D601 ~ 606 609 ~ 616, 625, 631 | | **MA162A** | Diode |
| D617 ~ 624 | | **20A90** | Diode, Synchronous Bias |
| D626 | | **SVDSR1K2** | Diode, Relay Pulse Killer |
| D637 ~ 640, 649, 650, 657, 658 | | LN417YP | Light Emitting Diode, Yellow |
| D651, 652, 902 | | SVDMZ303A | Diode, 3V Zener |
| D701 ~ 708 | ⚠ | **SVDS3V40** | Rectifier |
| D709 | | SVDMZ306B2 | Diode, 6V Zener |
| D710, 711 | | SVDMZ316A1 | Diode, 16V Zener |
| D712, 714, 715, 717, 718, 925 | | **SVDSR1K2** | Rectifier |
| D713 | | **SVDEQA0115R** | Diode, 15V Zener |
| D716 | | **SVDEQA0113RA** | Diode, 13V Zener |
| D719 | | SVDMZ336B | Diode, 36V Zener |
| D901, 903, 904, 905, 907, 908, 909, 910, 913 ~920, 922, 923, 924, 935, 936 | | **MA162A** | Diode |
| D921 | | **RVDRD6R2EB** | Diode, 6.2V Zener |
| D934 | | SVDMZ327B | Diode, 27V Zener |
| **COLIS and TRANSFORMERS** | | | |
| L1 | | SLAA4W1–3 | Coil, FM Antenna, Balun |
| L2, 4, 8 | | SLQX39G–M | Coil, Choke |
| L3 | | SLA4P43 | Coil, FM Antenna |
| L5, 6 | | SLD4P43 | Coil, FM RF Detector |
| L7 | | RLQY15G5–Y | Coil, Choke |
| L9 | | SLO4P85 | Coil, FM Local Oscillator |
| L10, 101, 103 | | SLQX101–3M | Coil, Choke |
| L102 | | SLQW270–1K | Coil, Choke |

| Ref. No. | | Part No. | |
|---|---|---|---|
| L201 | | SLF2D69 | Coil, AM |
| L202 | | SLO2C25–P | Coil, AM |
| L301 | | SLMA1Z3–Z | Coil, Lov |
| L601, 602 | | SLQY15G–30 | Coil, Chc |
| L901 | | **RLQY25S2** | Coil, Chc |
| L1001 | | SLQX101–3M | Coil, Chc |
| T1 | | SLI4C109 | Transforr |
| T101 | | SLI4C511–K | Transforr |
| T102 | | SLI4C513–K | Transforr |
| T201 | | SLI2C127 | Transforr |
| T202 | | SLI2C413R | Transforr |
| T701 | ⚠ | SLT5R39 | Transforr |
| **CERAMIC FILTERS** | | | |
| CF101, 104, 105 | | SVFE107MM–A | Ceramic I |
| CF102, 103 | | SVFE107MX2–A | Ceramic I |
| CF201 | | SVFSFP450H | Ceramic, |
| **CRYSTAL** | | | |
| X901 | | SVQ43U452 | Crystal, 4 |
| **VARIABLE RESISTORS** | | | |
| VR1 | | EWFMSAF25B15 | Volume C |
| VR2 | | EWJEDA090252 | Balance C |
| VR3 | | EWJFCO090C15 | Treble Co |
| VR4 | | EWJFCY090530 | Bass Cont |
| VR5 | | EWJFAA090G54 | Middle Co |
| VR101 | | EVNK4AA00B34 | Muting Le |
| VR102 | | **EVNM4AA00B24** | Signal LE |
| VR301 | | EVNM4AA00B55 | Separatior |
| VR302 | | **EVNM4AA00B14** | PLL MPX |
| VR303 | | EVNK4AA00B55 | Narrow Ba |
| VR601 ~ 604 | | **EVNM4AA00B13** | Power Am |
| VR1001, 1002 | | **EVNM4AA00B24** | Power LE |
| VR1003, 1004 | | **EVNM4AA00B52** | Power LE |
| **VARIABLE CAPACITORS** | | | |
| CT1 | | ECV1ZW06X32E | Trimmer, |
| CT201 | | SVCTY121B269 | Trimmer, |
| **THERMISTERS** | | | |
| TH101, 102 601, 602 | | ERTD2FHL103S | Thermiste |
| **LAMP** | | | |
| PL1 | ⚠ | XAM43P | Lamp, Nev |
| **FUSES** | | | |
| F1 | ⚠ | XBA1F80NU14 | Fuse, Pow |
| F2 | ⚠ | XBA1F20NU14 | Fuse, Pow |
| **COMPONENT COMBINATIONS** | | | |
| Z701 ~ 704 | | EXRFS203ZS | Componen |
| Z901, 902 | | EXBP87104K | Componen |
| Z903, 904 | | EXFP7331M | Componen |
| Z905 | | EXRP182K104C | Componen |

## REPLACE CHIPS

### R, CAPACITOR AND JUMPER)

er from chip by using solder sucker.
) with tweezers by rotating it while remov-
shown in fig. 1.
it board first and then solder chip in the
the arrow as shown in fig. 2.

chip again which is removed from printed

e with insulator for replacement instead of

| | Original Parts Name |
|---|---|
| | Chip Resistor and Jumper |
| Green | Chip Capacitor |

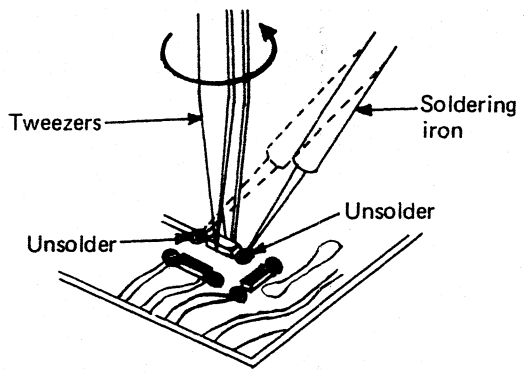



Fig. 1

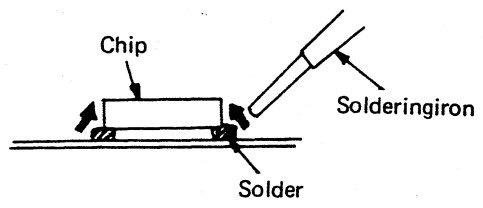



Fig. 2

- **Note for replacing chips**
  1. Do not heat chips more than thre
  2. Be careful not to damage the elec
  3. Use soldering iron (less than 6 replacing chips.

- **Precautions for repair**

When frequency is not indicated, driver, digit circuit, and micro-com by oscilloscope.
In this case, take care not to allow s terminals or application of voltage ment to IC terminals.

| t No. | Part Name & Description |
|---|---|
| 069 | Coil, AM Ferrite Bar Antenna |
| C25–P | Coil, AM Local Oscillator |
| 1Z3–Z | Coil, Low Pass Filter |
| 15G–30 | Coil, Choke |
| **'25S2** | Coil, Choke |
| 101–3M | Coil, Choke |
| 109 | Transformer, FM IF |
| 511–K | Transformer, FM IF, Discriminator |
| 513–K | Transformer, FM IF, Discriminator |
| 127 | Transformer, AM IF |
| 413R | Transformer, AM IF |
| R39 | Transformer, Power Source |
| 107MM–A | Ceramic Filter, FM 10.7MHz, Red |
| 107MX2–A | Ceramic Filter, FM 10.7MHz, Red |
| FP450H | Ceramic, Filter, AM 450kHz |
| U452 | Crystal, 4.5MHz, Counter Oscillator |
| SAF25B15 | Volume Control, 100kΩ (B) |
| DA090252 | Balance Control, 200kΩ (BH) |
| C0090C15 | Treble Control, 100kΩ (C) Special |
| CY090530 | Bass Control, 100kΩ (C) Special |
| AA090G54 | Middle Control, 50kΩ (G) |
| 4AA00B34 | Muting Level Adjustment, 30kΩ (B) |
| **4AA00B24** | Signal LED Meter Adjustment, 20kΩ (B) |
| 4AA00B55 | Separation Adjustment, 500kΩ (B) |
| **4AA00B14** | PLL MPX Adjustment, 10kΩ (B) |
| 4AA00B55 | Narrow Band Separation Adjustment, 500kΩ (B) |
| **4AA00B13** | Power Amplifier Adjustment, 1kΩ (B) |
| **4AA00B24** | Power LED Meter Adjustment, 20kΩ (B) |
| **4AA00B52** | Power LED Meter Adjustment, 500Ω (B) |
| W06X32E | Trimmer, FM Local Oscillator |
| 121B269 | Trimmer, AM Antenna |
| FHL103S | Thermister, Thermal Compensation, 10kΩ |
| P | Lamp, New Class A Light, 12,6V 0.3A |
| 80NU14 | Fuse, Power Source, 8A (125V) |
| 20NU14 | Fuse, Power Source, 2A (125V) |
| **ONS** | |
| 203ZS | Component Combination, 0.01μF (X2) |
| 7104K | Component Combination, 100kΩ (X7) |
| 331M | Component Combination, 330pF (X7) |
| 82K104C | Component Combination, 0.0018μF & 100kΩ |

| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| **SWITCHES** | | | |
| S1 | | ESA26143 | Switch, Selector |
| S2 | | ESA2631 | Switch, Tape Monitor |
| S3 | | ESA26521 | Switch, Recording Mode |
| S4, 5, 6 | | SSL149 | Switch, Mode/Muting/Loudness |
| S7 | | SSL153 | Switch, Acoustic Control |
| S8, 9 | | SSL159 | Switch, High & Low Boost/Cut |
| S10 | | SSR145–1 | Switch, Speaker |
| S11 | ⚠ | SSL133 | Switch, Power Source |
| S101, 914 | | ESD14116 | Switch, FM Antenna/Allocation |
| S700 ~ 705 | | SSH621 | Switch, FM De-emphasis 25μs/50μs/75μs/Hi-Blend/IF Band/Muting |
| S706, 707 | | SSH283 | Switch, Power Display/Range |
| S901 ~ 913 | | SSG1 | Switch, Memory/Preset/FM·AM/Manual |
| **FLUORESCENT DISPLAY TUBE** | | | |
| FL | | SAD7MT09ZA | Fluorescent Display Tube |
| **RELAY** | | | |
| RLY1 | ⚠ | SSY19–1 | Relay, Speaker Output |
| **RESISTORS** | | | |
| R1 | | **ERO50CKF1823** | Metal Film 182kΩ, 1/2W, ± 1% |
| R2 | | RRD18XK563 | Chip, 56kΩ, 1/8W, ±10% |
| R3 | | **ERD25TJ104** | Carbon, 100kΩ, 1/4W, ± 5% |
| R4 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R5 | | **ERD25TJ563** | Carbon, 56kΩ, 1/4W, ± 5% |
| R6 | | RRD18XK333 | Chip, 33kΩ, 1/4W, ±10% |
| R7 | | RRD18XK100 | Chip, 10Ω, 1/8W, ±10% |
| R8 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R9, 10 | | RRD18XK223 | Chip, 22kΩ, 1/8W, ±10% |
| R11 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R12 | | RRD18XK822 | Chip, 8.2kΩ, 1/8W, ±10% |
| R13 | | RRD18XK152 | Chip, 1.5kΩ, 1/8W, ±10% |
| R15, 16 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R17 | | RRD18XK332 | Chip, 3.3kΩ, 1/8W, ±10% |
| R18 | | RRD18XK102 | Chip, 1kΩ, 1/8W, ±10% |
| R19 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R20 | | RRD18XK332 | Chip, 3.3kΩ, 1/8W, ±10% |
| R21 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R22 | | RRD18XK472 | Chip, 4.7kΩ, 1/8W, ±10% |
| R23 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R24 | | RRD18XK182 | Chip, 1.8kΩ, 1/8W, ±10% |
| R25 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R26 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R27 | | RRD18XK100 | Chip, 10Ω, 1/8W, ±10% |
| R101 | | RRD18XK821 | Chip, 820Ω, 1/8W, ±10% |
| R102 | | RRD18XK102 | Chip, 1kΩ, 1/8W, ±10% |
| R103 | | RRD18XK331 | Chip, 330Ω, 1/8W, ±10% |
| R104 | | RRD18XK391 | Chip, 390Ω, 1/8W, ±10% |
| R105 | | RRD18XK561 | Chip, 560Ω, 1/8W, ±10% |
| R106 | | RRD18XK472 | Chip, 4.7kΩ, 1/8W, ±10% |
| R107 | | RRD18XK153 | Chip, 15kΩ, 1/8W, ±10% |
| R108 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R109 | | RRD18XK331 | Chip, 330Ω, 1/8W, ±10% |
| R110 | | RRD18XK102 | Chip, 1kΩ, 1/8W, ±10% |
| R111 | | RRD18XK681 | Chip, 680Ω, 1/8W, ±10% |
| R112 | | RRD18XK331 | Chip, 330Ω, 1/8W, ±10% |
| R113 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R114 | | RRD18XK271 | Chip, 270Ω, 1/8W, ±10% |
| R115 | | RRD18XK100 | Chip, 10Ω, 1/8W, ±10% |
| R116 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R117 | | RRD18XK100 | Chip, 10Ω, 1/8W, ±10% |
| R118 | | RRD18XK153 | Chip, 15kΩ, 1/8W, ±10% |
| R119 | | RRD18XK822 | Chip, 8.2kΩ, 1/8W, ±10% |
| R120 | | RRD18XK331 | Chip, 330Ω, 1/8W, ±10% |
| R121 | | RRD18XK561 | Chip, 560Ω, 1/8W, ±10% |

| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| R122 | | RRD18XK100 | Chip, 10Ω, 1/8W, ±10% |
| R123 | | RRD18XK331 | Chip, 330Ω, 1/8W, ±10% |
| R124 | | RRD18XK123 | Chip, 12kΩ, 1/8W, ±10% |
| R125 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R126 | | RRD18XK562 | Chip, 5.6kΩ, 1/8W, ±10% |
| R127 | | RRD18XK331 | Chip, 330Ω, 1/8W, ±10% |
| R128 | | RRD18XK824 | Chip, 820kΩ, 1/8W, ±10% |
| R129, 130 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R131 | | RRD18XK183 | Chip, 18kΩ, 1/8W, ±10% |
| R132 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R133 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R135 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R137, 138 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R139 | | RRD18XK472 | Chip, 4.7kΩ, 1/8W, ±10% |
| R140 | | RRD18XK470 | Chip, 47Ω, 1/8W, ±10% |
| R141 | | **ERD25TJ472** | Carbon, 4.7kΩ, 1/4W, ± 5% |
| R142 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R143 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R144 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R145 | | **ERO25CKF1822** | Metal Film, 18.2kΩ, 1/4W, ± 1% |
| R146 | | RRD18XK473 | Chip, 47kΩ, 1/8W, ±10% |
| R147 | | RRD18XK332 | Chip, 3.3kΩ, 1/8W, ±10% |
| R148 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R149 | | RRD18XK824 | Chip, 820kΩ, 1/8W, ±10% |
| R150 | | RRD18XK102 | Chip, 1kΩ, 1/8W, ±10% |
| R151 | | RRD18XK153 | Chip, 15kΩ, 1/8W, ±10% |
| R152 | | RRD18XK100 | Chip, 10Ω, 1/8W, ±10% |
| R153 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R154 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R155 | | RRD18XK562 | Chip, 5.6kΩ, 1/8W, ±10% |
| R157 | | RRD18XK332 | Chip, 3.3kΩ, 1/8W, ±10% |
| R158 | | RRD18XK473 | Chip, 47kΩ, 1/8W, ±10% |
| R159 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R160 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R161 | | RRD18XK334 | Chip, 330kΩ, 1/8W, ±10% |
| R162 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ± 5% |
| R163 | | **ERD25FJ332** | Carbon, 3.3kΩ, 1/4W, ± 5% |
| R201 | | RRD18XK151 | Chip, 150Ω, 1/8W, ±10% |
| R202 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R203 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R204 | | RRD18XK561 | Chip, 560Ω, 1/8W, ±10% |
| R205 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R206 | | RRD18XK822 | Chip, 8.2kΩ, 1/8W, ±10% |
| R207 | | RRD18XK562 | Chip, 5.6kΩ, 1/8W, ±10% |
| R208 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R209 | | RRD18XK392 | Chip, 3.9kΩ, 1/8W, ±10% |
| R210 | | RRD18XK332 | Chip, 3.3kΩ, 1/8W, ±10% |
| R211 | | RRD18XK102 | Chip, 1kΩ, 1/8W, ±10% |
| R212, 213 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R214 | | RRD18XK332 | Chip, 3.3kΩ, 1/8W, ±10% |
| R215 | | RRD18XK394 | Chip, 390kΩ, 1/8W, ±10% |
| R216 | | RRD18XK471 | Chip, 470Ω, 1/8W, ±10% |
| R217 | | RRD18XK472 | Chip, 4.7kΩ, 1/8W, ±10% |
| R218 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R219 | | RRD18XK124 | Chip, 120kΩ, 1/8W, ±10% |
| R220 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R221 | | RRD18XK472 | Chip, 4.7kΩ, 1/8W, ±10% |
| R222 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R223 | | **ERO25CKF4642** | Metal Film 46.4kΩ, 1/4W, ± 1% |
| R224 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R225 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R226 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R227 | | RRD18XK100 | Chip, 10Ω, 1/8W, ±10% |
| R228 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R301 | | RRD18XK220 | Chip, 22Ω, 1/8W, ±10% |
| R302 | | **ERO25CKF2672** | Metal Film 26.7kΩ, 1/4W, ± 5% |
| R303, 304 | | RRD18XK223 | Chip, 22kΩ, 1/8W, ±10% |
| R305, 306 | | RRD18XK473 | Chip, 47kΩ, 1/8W, ±10% |
| R307, 308 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R309, 310 | | RRD18XK392 | Chip, 3.9kΩ, 1/8W, ±10% |
| R311 | | RRD18XK223 | Chip, 22kΩ, 1/8W, ±10% |

| Ref. No. | | Part No. | |
|---|---|---|---|
| R312 | | RRD18XK333 | Ch |
| R313 | | RRD18XK103 | Ch |
| R314 | | RRD18XK153 | Ch |
| R315 | | RRD18XK102 | Ch |
| R316 | | RRD18XK104 | Ch |
| R317 | | RRD18XK222 | Ch |
| R318 | | RRD18XK104 | Ch |
| R319, 320 | | RRD18XK472 | Ch |
| R321, 322 | | **ERD25TJ824** | Car |
| R323, 324 | | **ERD25TJ824** | Car |
| R324, 325 | | **ERD25TJ824** | Car |
| R326, 327 | | **ERD25TJ824** | Car |
| R401, 402 | | **ERO25CKF1003** | Me |
| R403, 404 | | **ERD25FJ221** | Car |
| R405, 406 | | **ERO25CKF8252** | Me |
| R407, 408 | | **ERO25CKF1400** | Me |
| R409, 410 | | **ERD25FJ222** | Car |
| R411, 412 | | **ERO25CKF1003** | Me |
| R413, 414 | | **ERO25CKF6811** | Me |
| R415, 416 | | **ERD25FJ221** | Car |
| R417, 418 | | **ERD25FJ222** | Car |
| R419, 420 | | **ERD25TJ563** | Car |
| R421, 422 | | **ERD25TJ104** | Car |
| R423, 424 | | **ERD25TJ824** | Car |
| R425, 426 | | **ERD25TJ824** | Car |
| R427, 428 | | **ERD25TJ824** | Car |
| R429, 430 | | **ERD25FJ331** | Car |
| R431, 432 | | **ERD25FJ331** | Car |
| R433, 434 | | **ERD25FJ222** | Car |
| R435 | | **ERD25FJ102** | Car |
| R451 | | **ERD25FJ101** | Car |
| R501, 502 | | **ERD25TJ224** | Car |
| R503, 504 | | **ERD25TJ474** | Car |
| R505, 506 | | **ERD25FJ102** | Car |
| R507, 508 | | **ERD25TJ474** | Car |
| R509, 510 | | **ERD25FJ332** | Car |
| R511, 512 | | **ERD25FJ681** | Carl |
| R513, 514 | | **ERD25FJ392** | Carl |
| R517, 518 | | **ERD25FJ332** | Carl |
| R519, 520 | | **ERD25TJ223** | Carl |
| R521, 522 | | **ERD25TJ393** | Carl |
| R523, 524 | | **ERD25FJ222** | Cart |
| R525, 526 | | **ERD25FJ221** | Carl |
| R527, 528 | | **ERD25FJ122** | Carl |
| R529, 530 | | **ERD25FJ122** | Cart |
| R531, 532 | | **ERD25TJ153** | Cart |
| R533, 534 | | **ERD25TJ474** | Cart |
| R535, 536 | | **ERD25TJ824** | Cart |
| R537, 538 | | **ERD25FJ272** | Cart |
| R539, 540 | | **ERD25TJ123** | Carl |
| R541, 542 | | **ERD25TJ333** | Cart |
| R543, 544 | | **ERD25FJ332** | Cart |
| R545, 546 | | **ERD25FJ103** | Cart |
| R601, 602 | ⚠ | **ERD25FJ101** | Cart |
| R603, 604 | | **ERD25TJ104** | Cart |
| R605, 606 | | **ERD25FJ222** | Cart |
| R607, 608 | | **ERD25FJ682** | Cart |
| R609, 610 | | **ERD25FJ682** | Cart |
| R611, 612 | | **ERD25FJ272** | Cart |
| R613, 614 | | **ERD25FJ390** | Cart |
| R615, 616 | ⚠ | **ERD25FJ101** | Cart |
| R617, 618 | ⚠ | **ERD25FJ101** | Cart |
| R619, 620 | | **ERD25FJ392** | Cart |
| R621, 622 | | **ERD25FJ562** | Cart |
| R623, 624 | | **ERD25TJ473** | Cart |
| R625, 626 | | **ERD25FJ561** | Cart |
| R627, 628 | ⚠ | **ERD25FJ560** | Cart |
| R629, 630 | ⚠ | **ERD25FJ820** | Cart |
| R631, 632 | | **ERD25TJ394** | Cart |
| R633, 634 | | **ERD25TJ473** | Cart |
| R635, 636 | | **ERD25TJ223** | Cart |
| R637, 638 | | **ERD25TJ223** | Cart |

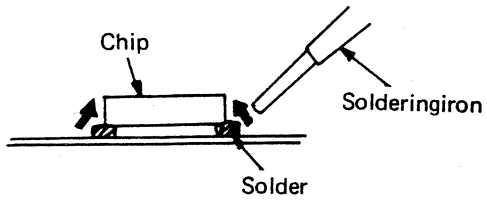



Fig. 2

### • Note for replacing chips

1. Do not heat chips more than three (3) seconds.
2. Be careful not to damage the electrode of chips.
3. Use soldering iron (less than 60W) and tweezers for replacing chips.

### • Precautions for repair

When frequency is not indicated, FL (display tube), FL driver, digit circuit, and micro-computer must be checked by oscilloscope.
In this case, take care not to allow shortcircuit between IC terminals or application of voltage from measuring instrument to IC terminals.

## ■ VARIABLE RESISTORS

**• Alteration of resistance values according to the rotatio**

Alteration characteristics as shown below are often use
the set at optimum levels, and are used according to th
sound volume adjustment; (A) and (C) are for bass a
quality adjustment; and (BH) is for the adjustment of so
In the case of this unit, variable resistor with characteri
angle of 150° (center) is used for bass adjustment. Also,
at rotational angle of 150° (center) is used for treble a
tors are interlocked with characteristics (C) and (A) com



| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| R122 | | RRD18XK100 | Chip, 10Ω, 1/8W, ±10% |
| R123 | | RRD18XK331 | Chip, 330Ω, 1/8W, ±10% |
| R124 | | RRD18XK123 | Chip, 12kΩ, 1/8W, ±10% |
| R125 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R126 | | RRD18XK562 | Chip, 5.6kΩ, 1/8W, ±10% |
| R127 | | RRD18XK331 | Chip, 330Ω, 1/8W, ±10% |
| R128 | | RRD18XK824 | Chip, 820kΩ, 1/8W, ±10% |
| R129, 130 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R131 | | RRD18XK183 | Chip, 18kΩ, 1/8W, ±10% |
| R132 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R133 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R135 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R137, 138 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R139 | | RRD18XK472 | Chip, 4.7kΩ, 1/8W, ±10% |
| R140 | | RRD18XK470 | Chip, 47Ω, 1/8W, ±10% |
| R141 | | **ERD25TJ472** | Carbon, 4.7kΩ, 1/4W, ± 5% |
| R142 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R143 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R144 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R145 | | **ERO25CKF1822** | Metal Film, 18.2kΩ, 1/4W, ± 1% |
| R146 | | RRD18XK473 | Chip, 47kΩ, 1/8W, ±10% |
| R147 | | RRD18XK332 | Chip, 3.3kΩ, 1/8W, ±10% |
| R148 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R149 | | RRD18XK824 | Chip, 820kΩ, 1/8W, ±10% |
| R150 | | RRD18XK102 | Chip, 1kΩ, 1/8W, ±10% |
| R151 | | RRD18XK153 | Chip, 15kΩ, 1/8W, ±10% |
| R152 | | RRD18XK100 | Chip, 10Ω, 1/8W, ±10% |
| R153 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R154 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R155 | | RRD18XK562 | Chip, 5.6kΩ, 1/8W, ±10% |
| R157 | | RRD18XK332 | Chip, 3.3kΩ, 1/8W, ±10% |
| R158 | | RRD18XK473 | Chip, 47kΩ, 1/8W, ±10% |
| R159 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R160 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R161 | | RRD18XK334 | Chip, 330kΩ, 1/8W, ±10% |
| R162 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ± 5% |
| R163 | | **ERD25FJ332** | Carbon, 3.3kΩ, 1/4W, ± 5% |
| R201 | | RRD18XK151 | Chip, 150Ω, 1/8W, ±10% |
| R202 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R203 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R204 | | RRD18XK561 | Chip, 560Ω, 1/8W, ±10% |
| R205 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R206 | | RRD18XK822 | Chip, 8.2kΩ, 1/8W, ±10% |
| R207 | | RRD18XK562 | Chip, 5.6kΩ, 1/8W, ±10% |
| R208 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R209 | | RRD18XK392 | Chip, 3.9kΩ, 1/8W, ±10% |
| R210 | | RRD18XK332 | Chip, 3.3kΩ, 1/8W, ±10% |
| R211 | | RRD18XK102 | Chip, 1kΩ, 1/8W, ±10% |
| R212, 213 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R214 | | RRD18XK332 | Chip, 3.3kΩ, 1/8W, ±10% |
| R215 | | RRD18XK394 | Chip, 390kΩ, 1/8W, ±10% |
| R216 | | RRD18XK471 | Chip, 470Ω, 1/8W, ±10% |
| R217 | | RRD18XK472 | Chip, 4.7kΩ, 1/8W, ±10% |
| R218 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R219 | | RRD18XK124 | Chip, 120kΩ, 1/8W, ±10% |
| R220 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R221 | | RRD18XK472 | Chip, 4.7kΩ, 1/8W, ±10% |
| R222 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R223 | | **ERO25CKF4642** | Metal Film 46.4kΩ, 1/4W, ± 1% |
| R224 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R225 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R226 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R227 | | RRD18XK100 | Chip, 10Ω, 1/8W, ±10% |
| R228 | | RRD18XK221 | Chip, 220Ω, 1/8W, ±10% |
| R301 | | RRD18XK220 | Chip, 22Ω, 1/8W, ±10% |
| R302 | | **ERO25CKF2672** | Metal Film 26.7kΩ, 1/4W, ± 5% |
| R303, 304 | | RRD18XK223 | Chip, 22kΩ, 1/8W, ±10% |
| R305, 306 | | RRD18XK473 | Chip, 47kΩ, 1/8W, ±10% |
| R307, 308 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R309, 310 | | RRD18XK392 | Chip, 3.9kΩ, 1/8W, ±10% |
| R311 | | RRD18XK223 | Chip, 22kΩ, 1/8W, ±10% |

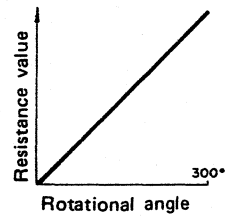
| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| R312 | | RRD18XK333 | Chip, 33kΩ, 1/8W, ±10% |
| R313 | | RRD18XK103 | Chip, 10kΩ, 1/8W, ±10% |
| R314 | | RRD18XK153 | Chip, 15kΩ, 1/8W, ±10% |
| R315 | | RRD18XK102 | Chip, 1kΩ, 1/8W, ±10% |
| R316 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R317 | | RRD18XK222 | Chip, 2.2kΩ, 1/8W, ±10% |
| R318 | | RRD18XK104 | Chip, 100kΩ, 1/8W, ±10% |
| R319, 320 | | RRD18XK472 | Chip, 4.7kΩ, 1/8W, ±10% |
| R321, 322 | | **ERD25TJ824** | Carbon, 820kΩ, 1/4W, ± 5% |
| R323, 324 | | **ERD25TJ824** | Carbon, 820kΩ, 1/4W, ± 5% |
| R324, 325 | | **ERD25TJ824** | Carbon, 820kΩ, 1/4W, ± 5% |
| R326, 327 | | **ERD25TJ824** | Carbon, 820kΩ, 1/4W, ± 5% |
| R401, 402 | | **ERO25CKF1003** | Metal Film, 100kΩ, 1/4W, ± 1% |
| R403, 404 | | **ERD25FJ221** | Carbon, 220Ω, 1/4W, ± 5% |
| R405, 406 | | **ERO25CKF8252** | Metal Film 82.5kΩ, 1/4W, ± 1% |
| R407, 408 | | **ERO25CKF1400** | Metal Film, 140Ω, 1/4W, ± 5% |
| R409, 410 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ± 5% |
| R411, 412 | | **ERO25CKF1003** | Metal Film, 100kΩ, 1/4W, ± 1% |
| R413, 414 | | **ERO25CKF6811** | Metal Film, 6.81kΩ, 1/4W, ± 1% |
| R415, 416 | | **ERD25FJ221** | Carbon, 220Ω, 1/4W, ± 5% |
| R417, 418 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ± 5% |
| R419, 420 | | **ERD25TJ563** | Carbon, 56kΩ, 1/4W, ± 5% |
| R421, 422 | | **ERD25TJ104** | Carbon, 100kΩ, 1/4W, ± 5% |
| R423, 424 | | **ERD25TJ824** | Carbon, 820kΩ, 1/4W, ± 5% |
| R425, 426 | | **ERD25TJ824** | Carbon, 820kΩ, 1/4W, ± 5% |
| R427, 428 | | **ERD25TJ824** | Carbon, 820kΩ, 1/4W, ± 5% |
| R429, 430 | | **ERD25FJ331** | Carbon, 330Ω, 1/4W, ± 5% |
| R431, 432 | | **ERD25FJ331** | Carbon, 330Ω, 1/4W, ± 5% |
| R433, 434 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ± 5% |
| R435 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ± 5% |
| R451 | | **ERD25FJ101** | Carbon, 100Ω, 1/4W, ± 5% |
| R501, 502 | | **ERD25TJ224** | Carbon, 220kΩ, 1/4W, ± 5% |
| R503, 504 | | **ERD25TJ474** | Carbon, 470kΩ, 1/4W, ± 5% |
| R505, 506 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ± 5% |
| R507, 508 | | **ERD25TJ474** | Carbon, 470kΩ, 1/4W, ± 5% |
| R509, 510 | | **ERD25FJ332** | Carbon, 3.3kΩ, 1/4W, ± 5% |
| R511, 512 | | **ERD25FJ681** | Carbon, 680Ω, 1/4W, ± 5% |
| R513, 514 | | **ERD25FJ392** | Carbon, 3.9kΩ, 1/4W, ± 5% |
| R517, 518 | | **ERD25FJ332** | Carbon, 3.3kΩ, 1/4W, ± 5% |
| R519, 520 | | **ERD25TJ223** | Carbon, 22kΩ, 1/4W, ± 5% |
| R521, 522 | | **ERD25TJ393** | Carbon, 39kΩ, 1/4W, ± 5% |
| R523, 524 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ± 5% |
| R525, 526 | | **ERD25FJ221** | Carbon, 220Ω, 1/4W, ± 5% |
| R527, 528 | | **ERD25FJ122** | Carbon, 1.2kΩ, 1/4W, ± 5% |
| R529, 530 | | **ERD25FJ122** | Carbon, 1.2kΩ, 1/4W, ± 5% |
| R531, 532 | | **ERD25TJ153** | Carbon, 15kΩ, 1/4W, ± 5% |
| R533, 534 | | **ERD25TJ474** | Carbon, 470kΩ, 1/4W, ± 5% |
| R535, 536 | | **ERD25TJ824** | Carbon, 820kΩ, 1/4W, ± 5% |
| R537, 538 | | **ERD25FJ272** | Carbon, 2.7kΩ, 1/4W, ± 5% |
| R539, 540 | | **ERD25TJ123** | Carbon, 12kΩ, 1/4W, ± 5% |
| R541, 542 | | **ERD25TJ333** | Carbon, 33kΩ, 1/4W, ± 5% |
| R543, 544 | | **ERD25FJ332** | Carbon, 3.3kΩ, 1/4W, ± 5% |
| R545, 546 | | **ERD25FJ103** | Carbon, 10kΩ, 1/4W, ± 5% |
| R601, 602 | △ | **ERD25FJ101** | Carbon, 100Ω, 1/4W, ± 5% |
| R603, 604 | | **ERD25TJ104** | Carbon, 100kΩ, 1/4W, ± 5% |
| R605, 606 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ± 5% |
| R607, 608 | | **ERD25FJ682** | Carbon, 6.8kΩ, 1/4W, ± 5% |
| R609, 610 | | **ERD25FJ682** | Carbon, 6.8kΩ, 1/4W, ± 5% |
| R611, 612 | | **ERD25FJ272** | Carbon, 2.7kΩ, 1/4W, ± 5% |
| R613, 614 | | **ERD25FJ390** | Carbon, 39Ω, 1/4W, ± 5% |
| R615, 616 | △ | **ERD25FJ101** | Carbon, 100Ω, 1/4W, ± 5% |
| R617, 618 | △ | **ERD25FJ101** | Carbon, 100Ω, 1/4W, ± 5% |
| R619, 620 | | **ERD25FJ392** | Carbon, 3.9kΩ, 1/4W, ± 5% |
| R621, 622 | | **ERD25FJ562** | Carbon, 5.6kΩ, 1/4W, ± 5% |
| R623, 624 | | **ERD25TJ473** | Carbon, 47kΩ, 1/4W, ± 5% |
| R625, 626 | | **ERD25FJ561** | Carbon, 560Ω, 1/4W, ± 5% |
| R627, 628 | △ | **ERD25FJ560** | Carbon, 56Ω, 1/4W, ± 5% |
| R629, 630 | △ | **ERD25FJ820** | Carbon, 82Ω, 1/4W, ± 5% |
| R631, 632 | | **ERD25TJ394** | Carbon, 390kΩ, 1/4W, ± 5% |
| R633, 634 | | **ERD25TJ473** | Carbon, 47kΩ, 1/4W, ± 5% |
| R635, 636 | | **ERD25TJ223** | Carbon, 22kΩ, 1/4W, ± 5% |
| R637, 638 | | **ERD25TJ223** | Carbon, 22kΩ, 1/4W, ± 5% |

| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| R639, 640 | | **ERD25FJ681** | Carbon, 680Ω, 1/4W, ± 5 |
| R641, 642 | △ | **ERD25FJ391** | Carbon 390Ω, 1/4W, ± 5 |
| R643, 644 | | **ERD25FJ472** | Carbon, 4.7kΩ, 1/4W, ± 5 |
| R645, 646 | | **ERD25FJ472** | Carbon, 4.7kΩ, 1/4W, ± 5 |
| R647, 648 | △ | **ERD25FJ152** | Carbon, 1.5kΩ, 1/4W, ± 5 |
| R649, 650 | △ | **ERD25FJ122** | Carbon, 1.2kΩ, 1/4W, ± 5 |
| R651, 652 | △ | **ERD25FJ152** | Carbon, 1.5kΩ, 1/4W, ± 5 |
| R653, 654 | △ | **ERD25FJ471** | Carbon, 470Ω, 1/4W, ± 5 |
| R655, 656 | △ | **ERD25FJ471** | Carbon, 470Ω, 1/4W, ± 5 |
| R657, 658 | | **ERG1ANJ822** | Metal Oxide, 8.2kΩ, 1W, ± 5 |
| R659, 660 | △ | **ERD25FJ821** | Carbon, 820Ω, 1/4W, ± 5 |
| R661, 662 | △ | **ERD25FJ152** | Carbon, 1.5kΩ, 1/4W, ± 5 |
| R663, 664 | △ | **ERD25FJ821** | Carbon, 820Ω, 1/4W, ± 5 |
| R665, 666 | | **ERG1ANJ822** | Metal Oxide, 8.2kΩ, 1W, ± 5 |
| R667, 668 | △ | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ± 5 |
| R669, 670 | △ | **ERD25FJ221** | Carbon, 220Ω, 1/4W, ± 5 |
| R671, 672 | △ | ERD25FAJ2R2 | Carbon, 2.2Ω, 1/4W, ± 5 |
| R673, 674 | △ | ERD25FAJ2R2 | Carbon, 2.2Ω, 1/4W, ± 5 |
| R675, 676 | △ | ERD25FAJ2R2 | Carbon, 2.2Ω, 1/4W, ± 5 |
| R677, 678 | △ | ERD25FAJ2R2 | Carbon, 2.2Ω, 1/4W, ± 5 |
| R679, 680 | △ | ERF5GEKR47N | Non-Flammable, 0.47Ω, 5W, ±10 |
| R681, 682 | △ | ERF5RKR47 | Non-Flammable, 0.47Ω, 5W, ±10 |
| R683, 684 | △ | ERF5RKR47 | Non-Flammable, 0.47Ω, 5W, ±10 |
| R685, 686 | | **ERG2ANJ120** | Metal Oxide, 12Ω, 2W, ± 5 |
| R687, 688 | | **ERD2ANJ120** | Metal Oxide, 12Ω, 2W, ± 5 |
| R689, 690 | △ | **ERD25FJ680** | Carbon, 68Ω, 1/4W, ± 5 |
| R691, 692 | △ | **ERD25FJ680** | Carbon, 68Ω, 1/4W, ± 5 |
| R693, 694 | | **ERD25TJ823** | Carbon, 82kΩ, 1/4W, ± 5 |
| R695 | | **ERD25TJ123** | Carbon, 12kΩ, 1/4W, ± 5 |
| R696 | | **ERD25TJ154** | Carbon, 150kΩ, 1/4W, ± 5 |
| R697 | | **ERD25TJ333** | Carbon, 33kΩ, 1/4W, ± 5 |
| R698 | | **ERD25TJ153** | Carbon, 15kΩ, 1/4W, ± 5 |
| R699 | | **ERG1ANJ472** | Metal Oxide, 4.7kΩ, 1W, ± 5 |
| R701 | | **ERG1ANJ222** | Metal Oxide, 2.2kΩ, 1W, ± 5 |
| R702 | △ | ERQ1CJ271 | Fuse Type Metallic, 270Ω, 1W, ± 5 |
| R703 | △ | ERQ2CJ221 | Fuse Type Metallic, 220Ω, 2W, ± 5 |
| R704 | | **ERO25CKF1212** | Metal Film, 12.1kΩ, 1/4W, ± 1 |
| R705 | | **ERO25CKF5601** | Metal Film,, 5.6kΩ, 1/4W, ± 1 |
| R706 | | **ERO25CKF1502** | Metal Film, 15kΩ, 1/4W, ± 1 |
| R707 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ± 5 |
| R708 | | **ERO25CKF1502** | Metal Film, 15kΩ, 1/4W, ±1 |
| R709 | △ | **ERD25FJ121** | Carbon, 120Ω, 1/4W, ± 5 |
| R710 | △ | **ERD25FJ820** | Carbon, 82Ω, 1/4W, ± 5 |
| R712 | △ | **ERD25FJ471** | Carbon, 470Ω, 1/4W, ± 5 |
| R713 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ± 5 |
| R714 | △ | **ERD50FJ220** | Carbon, 22Ω, 1/2W, ± 5 |
| R715 | △ | **ERD50FJ471** | Carbon, 470Ω, 1/2W, ± 5 |
| R716 | △ | ERD25FAJ2R2 | Carbon, 2.2Ω, 1/4W, ± 5 |
| R717 | △ | **ERC12ZGK335** | Solid, 3.3MΩ, 1/2W, ±1 |
| R720 | △ | **ERD50FJ222** | Carbon, 2.2kΩ, 1/2W, ± 5 |
| R721 | | **ERD25FJ151** | Carbon, 150Ω, 1/3W, ± 5 |
| R750 | | **ERG2ANJ180** | Metal Oxide, 18Ω, 2W, ± 5 |
| R751 | | **ERD25FJ332** | Carbon, 3.3kΩ, 1/4W, ± 5 |
| R752 | △ | **ERD50FJ272** | Carbon, 2.7kΩ, 1/2W, ± 5 |
| R753 | | **ERG1ANJ222** | Metal Oxide, 2.2kΩ, 1W, ± 5 |
| R901, 902 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ± 5 |
| R903 | | **ERD25FJ103** | Carbon, 10kΩ, 1/4W, ± 5 |
| R904 | | **ERD25TJ223** | Carbon, 22kΩ, 1/4W, ± 5 |
| R905 | | **ERD25FJ682** | Carbon, 6.8kΩ, 1/4W, ± 5 |
| R906 | | **ERD25FJ822** | Carbon, 8.2kΩ, 1/4W, ± 5 |
| R907 | | **ERD25TJ393** | Carbon, 39kΩ, 1/4W, ± 5 |
| R908 | | **ERD25TJ104** | Carbon, 100kΩ, 1/4W, ± 5 |
| R909 | | **ERD25TJ563** | Carbon, 56kΩ, 1/4W, ± 5 |
| R910 | | **ERD25TJ104** | Carbon, 100kΩ, 1/4W, ± 5 |
| R911 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ± 5 |
| R912 | | **ERD25FJ332** | Carbon, 3.3kΩ, 1/4W, ± 5 |
| R913 | | **ERD25FJ152** | Carbon, 1.5kΩ, 1/4W, ± 5 |
| R914 | | **ERD25FJ682** | Carbon, 6.8kΩ, 1/4W, ± 5 |
| R915 | | **ERD25TJ153** | Carbon, 15kΩ, 1/4W, ± 5 |
| R916 | | **ERD25TJ333** | Carbon, 33kΩ, 1/4W, ± 5 |
| R917 | | **ERD25FJ100** | Carbon, 10Ω, 1/4W, ± 5 |

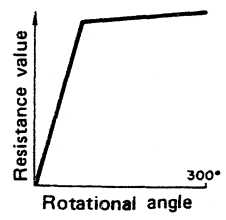
**e rotational angles of variable resistors**

often used for sets. All are intended to keep the frequency response of ing to the types of circuits. For example, characteristic (B) is used for r bass and treble sound quality adjustment; (G) is for medium sound ent of sound balance between the right and left.

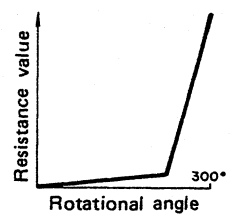
haracteristic (C) which is short-circuited between its ends at rotational nt. Also, variable resistor with characteristic (C) whose resistance is zero treble adjustment. And characteristic (BH) in which two variable resis- (A) combined is used for the adjustment of sound level balance.



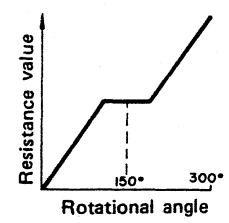
**Characteristic (B)**



**Characteristic (C)**

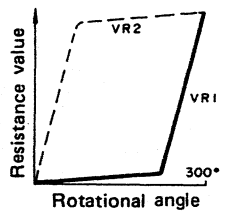


**Characteristic (A)**

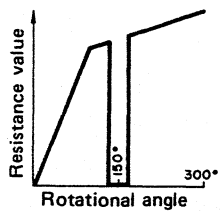


**Characteristic (G)**

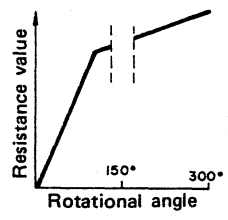
VR1 is inter locked with VR2



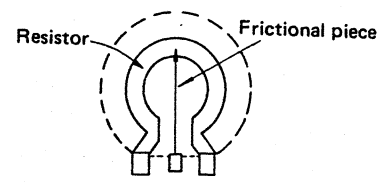
**Characteristic (BH)**



**Characteristic (C): short-circuited at center**



**Characteristic (C): opened at center**




**SA-818**

| iption | | | | | | |
|---|---|---|---|---|---|---|
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| | | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| 1W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| | | | | | | |
| /4W, | ± 5% | | | | | |
| 1W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| 5W, | ±10% | | | | | |
| 5W, | ±10% | | | | | |
| | | | | | | |
| 5W, | ±10% | | | | | |
| 2W, | ± 5% | | | | | |
| 2W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| 1W, | ± 5% | | | | | |
| 1W, | ± 5% | | | | | |
| 1W, | ± 5% | | | | | |
| 2W, | ± 5% | | | | | |
| | | | | | | |
| /4W, | ± 1% | | | | | |
| /4W, | ± 1% | | | | | |
| /4W, | ± 1% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ±1% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /2W, | ± 5% | | | | | |
| | | | | | | |
| /2W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /2W, | ±10% | | | | | |
| /2W, | ± 5% | | | | | |
| /3W, | ± 5% | | | | | |
| 2W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /2W, | ± 5% | | | | | |
| 1W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| | | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5% | | | | | |
| /4W, | ± 5%

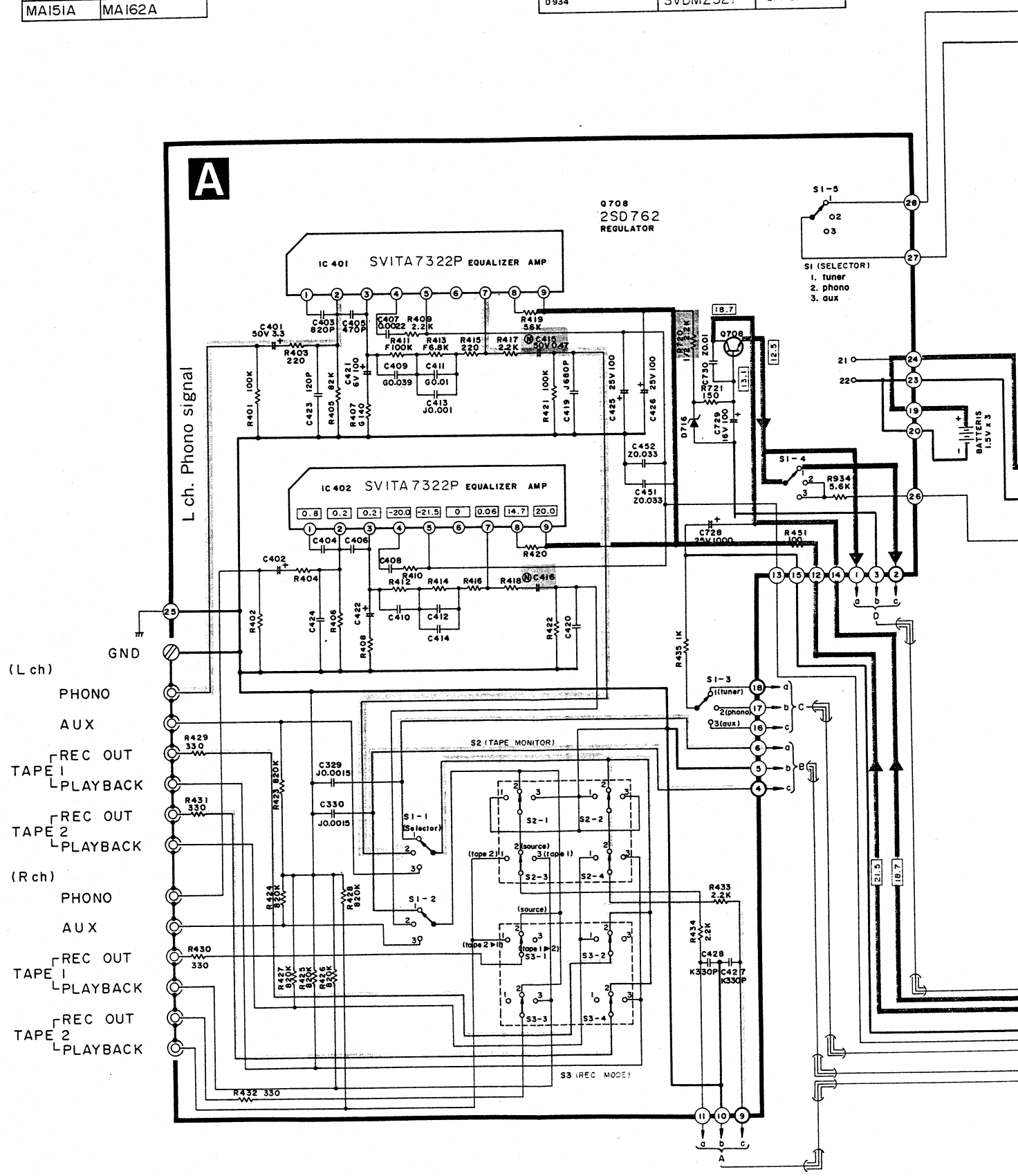
# ■ SCHEMATIC DIAGRAM Ⓐ (A, B, C and D P.C.B.) ...MODEL SA-818

**Production parts No. and standardized parts No.**

| Production Parts No. | Standardized Parts No. |
|---|---|
| 2SA564 | 2SA666A1 |
| 2SC828 | 2SC1328 |
| MA150 | MA162A |
| 0A99 | 2-0A99 |
| SVDS3V20 | SVDS3V40 |
| SVDMZ3I4 | SVDEQA0115R |
| MA1130A | SVDEQA0113RA |
| MA1062 | RVDRD6R2EB |
| MA151A | MA162A |

**DIODES**

| | | |
|---|---|---|
| D1, 2, 3, 4 | SVDBB204 | FM Variable capacitor |
| D101, 203, 205, 302 304, 305 | MA151K | |
| D102 | MA150 | |
| D201 | SVDBB113 | AM Variable capacitor |
| D202, 301 | MA151A | |
| D204 | 0A99 | |
| D716 | MA1130A | 13V Zener |
| D902 | SVDMZ303A | 3V Zener |
| D901, 903, 904, 905 907, 908, 909, 910 913, 914, 915, 916 917, 918, 919, 920 922, 923, 924, 925 | MA150 | |
| D906 | 0A99 | |
| D921 | MA1062 | 6.2V Zener |
| D925 | SVDSR1K2 | |
| D934 | SVDMZ327 | 27V Zener |





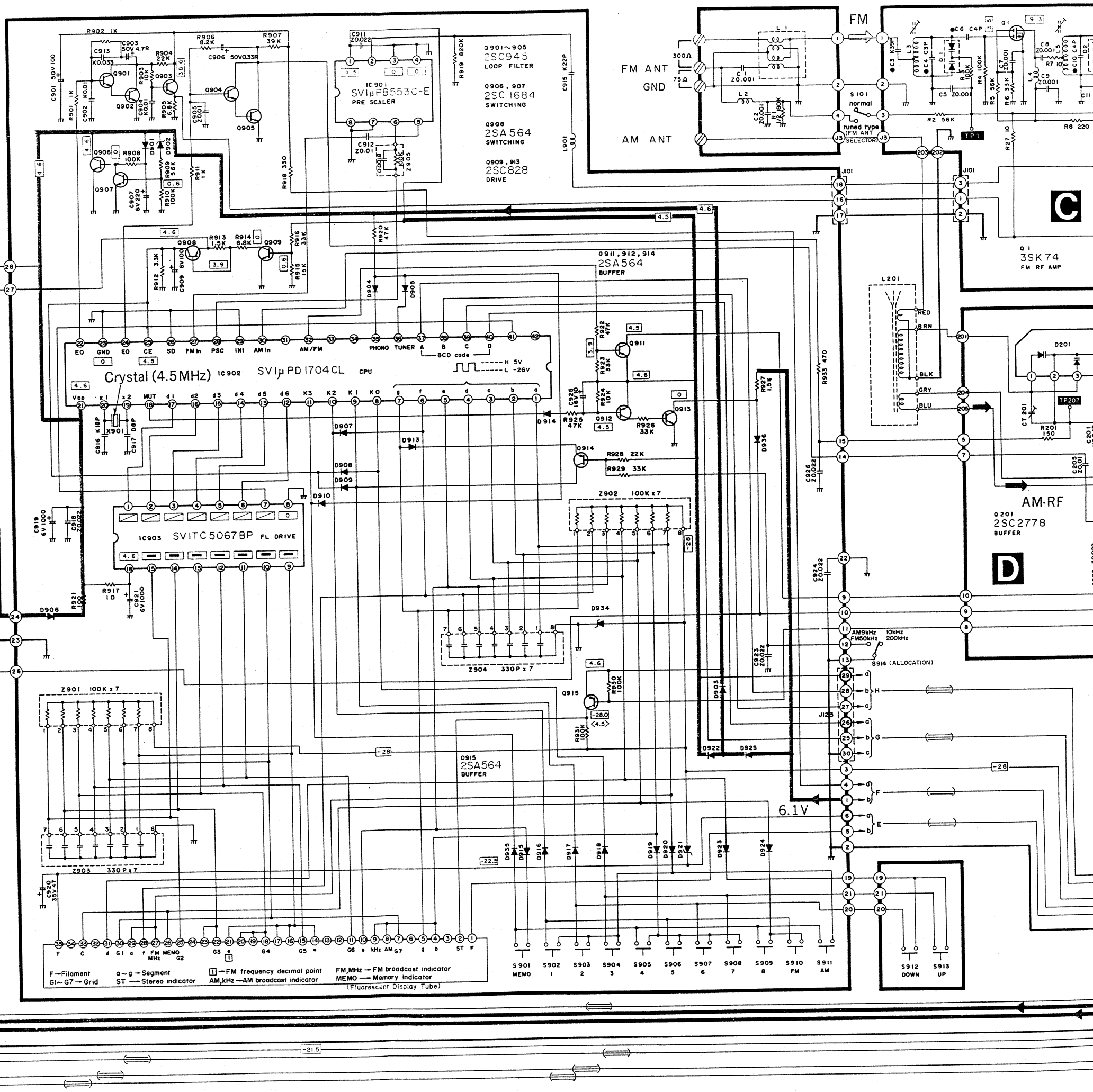

Technics 1200

**Notes 1:**

1. **S1-1 ~ S1-5** : Input selector switch in "**tuner**" position. ( ① tuner ⟷ ② phono ⟷ ③ aux)
2. **S2-1 ~ S2-4** : Tape monitor switch in "**source**" position. (① tape 2 ⟷ ②source ⟷ ③ tape 1)
3. **S3-1 ~ S3-4** : Recording mode switch in "**source**" position. (① tape 2 ▶ 1 ⟷ ②source ⟷ ③tape 1 ▶ 2)
4. **S101** : FM antenna selector switch in "**normal**" position. (normal ⟷ tuned type)
5. **S901** : Memory set switch
6. **S902 ~ S909** : Preset tuning switch.
   (S902 : 1 ch. S903 : 2 ch. S904 : 3 ch. S905 : 4 ch. S906 : 5 ch. S907 : 6 ch. S908 : 7 ch. S909 : 8 ch.)
7. **S910** : FM tuner selection switch.
8. **S911** : AM tuner selection switch.
9. **S912** : Manual tuning "**down**" switch.
10. **S913** : Manual tuning "**up**" switch.
11. **S914** : FM/AM allocation selector switch in "**FM 0.2MHz/AM 10kHz**" step position. (FM 0.2MHz/AM 10kHz ⟷ FM 0.05MHz/AM 9kHz)
12. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    * Figures in ☐ stand for DC voltage in FM/AM signal reception mode.
    * Figures in < > stand for DC voltage in FM stereo signal receptiom mode.
    * Figures in ⌜ ⌟ stand for DC voltage in FM (no signal) muting to on mode.
    * Figures in ( ) stand for DC voltage with the FM/AM selector circuit set at AM.
    * ▨ marked terminal : 5
    * ▭ marked terminal : 5
13. Transistor and IC terminals wh
    or are subject to change accord
14. Signal lines
    ⇨ FM/AM composite
    Audio frequency si
    Positive voltage lin

6 7 8 9 10 11 12 13

B C D



7. **S910** : FM tuner selection switch.
8. **S911** : AM tuner selection switch.
9. **S912** : Manual tuning **"down"** switch.
10. **S913** : Manual tuning **"up"** switch.
11. **S914** : FM/AM allocation selector switch in **"FM 0.2MHz/AM 10kHz"** step position. (FM 0.2MHz/AM 10kHz ⟷ FM 0.05MHz/AM 9kHz)
12. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    * Figures in [ ] stand for DC voltage in FM/AM signal reception mode.
    * Figures in < > stand for DC voltage in FM stereo signal receptiom mode.
    * Figures in ⌜ ⌟ stand for DC voltage in FM (no signal) muting to on mode.
    * Figures in ( ) stand for DC voltage with the FM/AM selector circuit set at AM.
    * ▱ marked terminal : 5V or 0V output.
    * ▭ marked terminal : 5V or −26V output.
13. Transistor and IC terminals which carry no voltage indication emit 5V pulse waveforms or are subject to change according to the frequency or input signal levels.
14. Signal lines
    ⇨ FM/AM composite signal
    Audio frequency signal
    Positive voltage lines
    → / ⇢ AM signal

The shac
porates s
When ser
er's speci
ponents i

9 10 11 12 13 14 15 16

Q901~905 2SC945 LOOP FILTER
Q906, 907 2SC1684 SWITCHING
Q908 2SA564 SWITCHING
Q909, 913 2SC828 DRIVE
Q911, 912, 914 2SA564 BUFFER
Q915 2SA564 BUFFER

TUNER A B C D BCD code
H 5V
L -26V

S901 MEMO
S902 1
S903 2
S904 3
S905 4
S906 5
S907 6
S908 7
S909 8
S910 FM
S911 AM
S912 DOWN
S913 UP
S914 (ALLOCATION)
AM9kHz FM50kHz 10kHz 200kHz

Z902 100K x 7
Z904 330P x 7

6.1V

FM
FM ANT
GND
AM ANT
300Ω
75Ω
S101 normal tuned type (FM ANT SELECTOR)

Q1 3SK74 FM RF AMP
Q2 2SC2404 MIXER
Q3, 4 2SC2295 BUFFER
Q5 2SC2295 FM OSC
OSC

Q101, 102 2SC2778 FM IF AMP
Normal IF
Narrow IF
CF101
CF102
CF103

L201
RED
BRN
BLK
GRY
BLU

D201
CT201
TP202
AM-RF
Q201 2SC2778 BUFFER

AM-OSC
IC201 AN217 AM/FM IF AMP
(0.7) (8.5) (1.5) (0.7) (11.0) (0.8) (1.6) (7.2)
Q103 2SC2 BUFFER
TP101
T201
T202

FM/AM band selection circuit

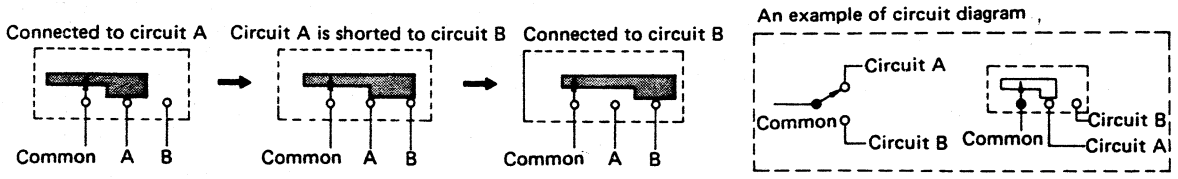
Q111
Q204
Q110
Q203

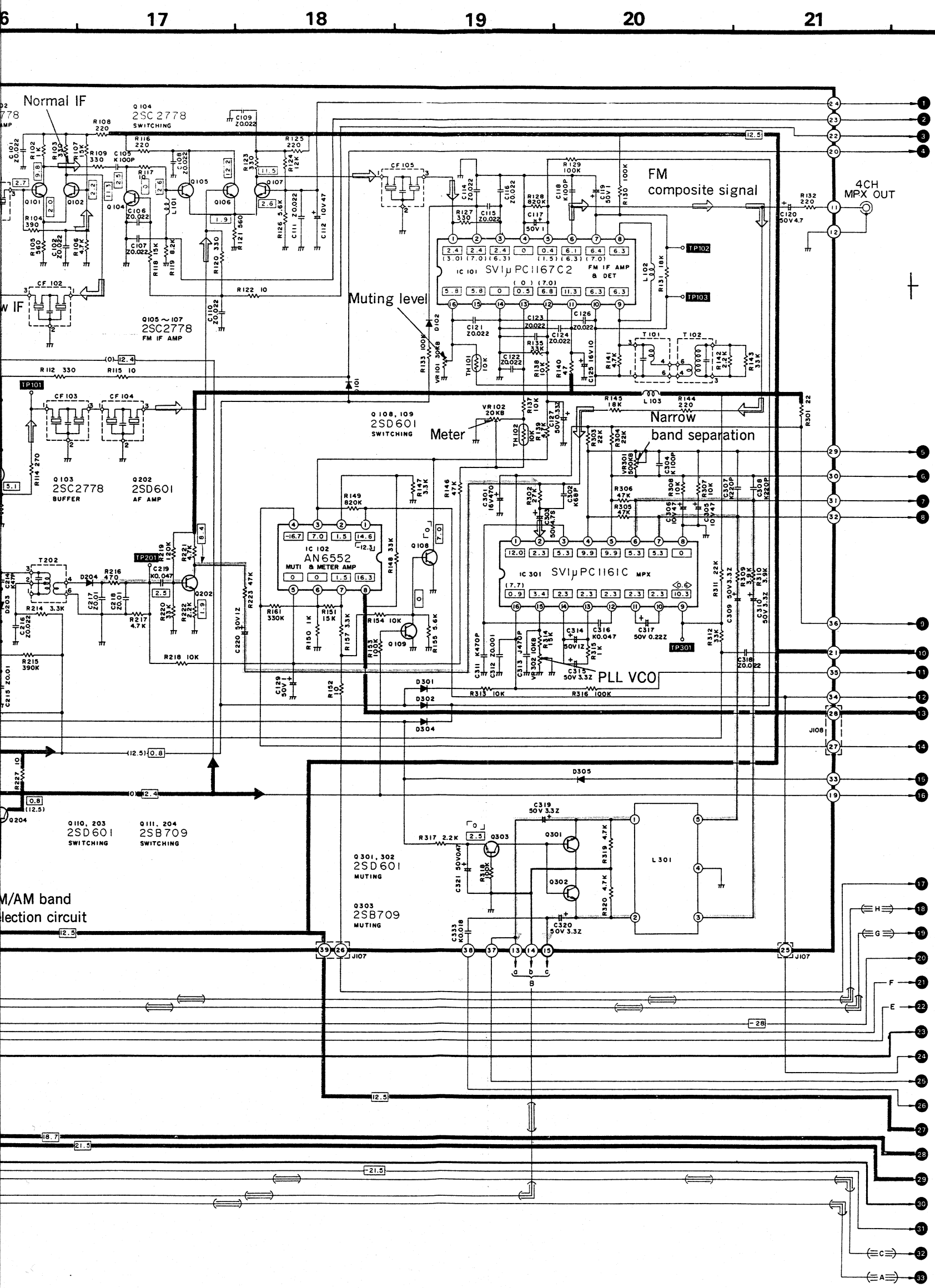
**IMPORTANT SAFETY NOTICE**

The shaded area on this schematic diagram incorporates special features important for safety. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

**Shorting Switch** (S1, S4 ~ S6, S8, S9, S700 ~ S705, S706 and S707)

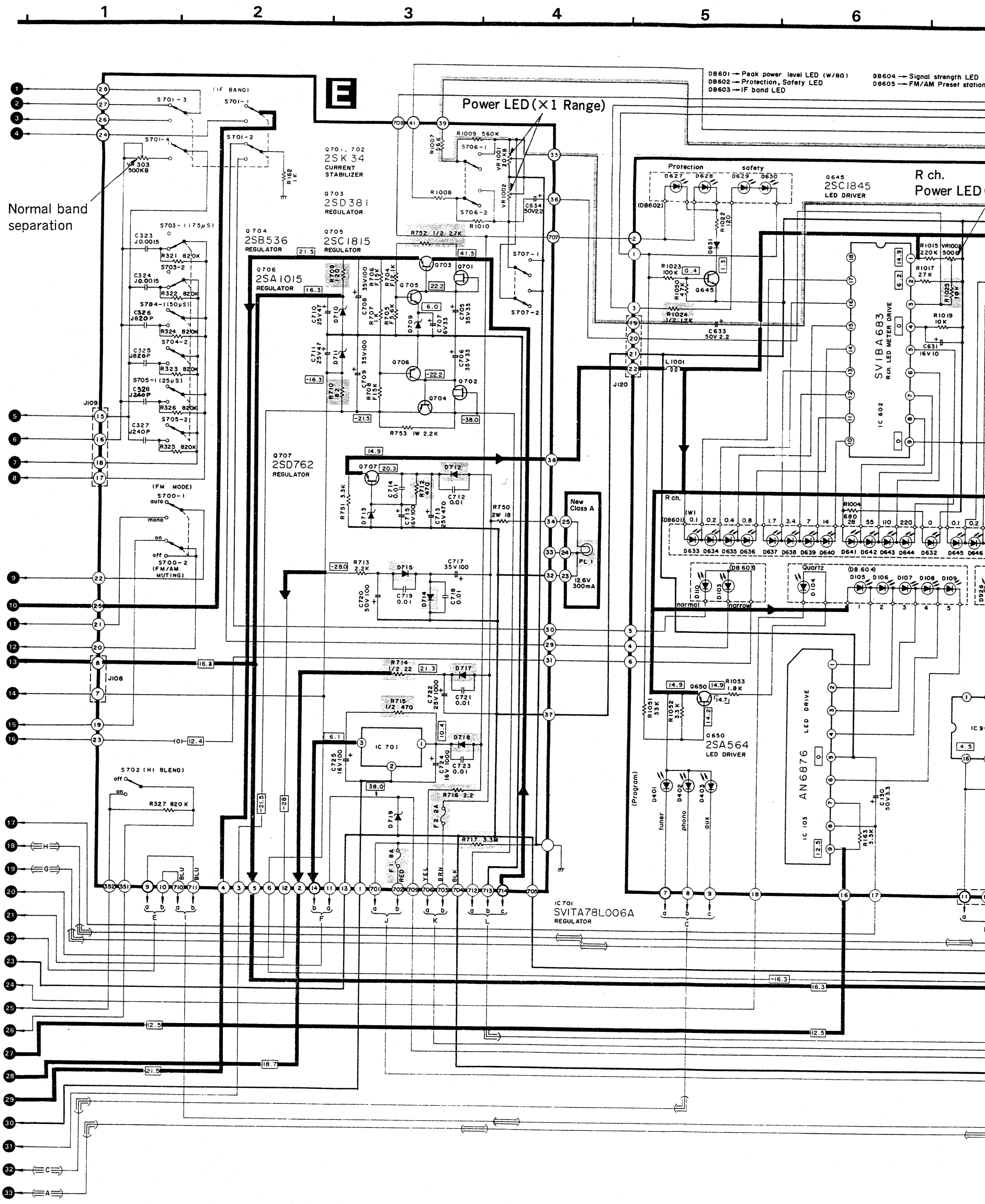
This unit uses a shorting switch. As illustrated below, the circuit is shorted to the next circuit without being opened. In the circuit diagram, the shaded area represents the common terminal.



## ■ SCHEMATIC DIAGRAM Ⓑ (E, F, G, H, I, J and K P.C.B.) ...MODEL **SA-818**

(This schemctic diagram may be modified at any time with the development of new technology.)




Technics 1260

7 8 9 10 11 12 13

Q8604 — Signal strength LED
Q8605 — FM/AM Preset station LED

R ch.
Power LED (×0.01 Range) **F**

L ch.
Power
LED
(×0.01
Range)

SVIBA683
Rch. LED METER DRIVE
IC 602

SVIBA683
Lch. LED METER DRIVE
IC 603

R1015 220K
VR1003 500Ω
R1017 27K
R1025 8.2K
R1019 10K
C631 16V10
R1016
VR1004
R1018
R1026
R1020
C632 16V10
C630 16V10
C651 16V10

110 220 0 0.1 0.2 0.4 0.8 1.7 3.4 7 14 28 55 110 (W) 220 Lch.
D643 D644 D632 D645 D646 D647 D648 D649 D650 D657 D658 D653 D654 D655 D656

D106 D107 D108 D109
D926 D927 D928 D929 D930 D931 D932 D933
D8605
R932 330

IC 905 SVIM74LS42P DECODER

C630 50V3.3

J123
a b c a b c
H G

**G**

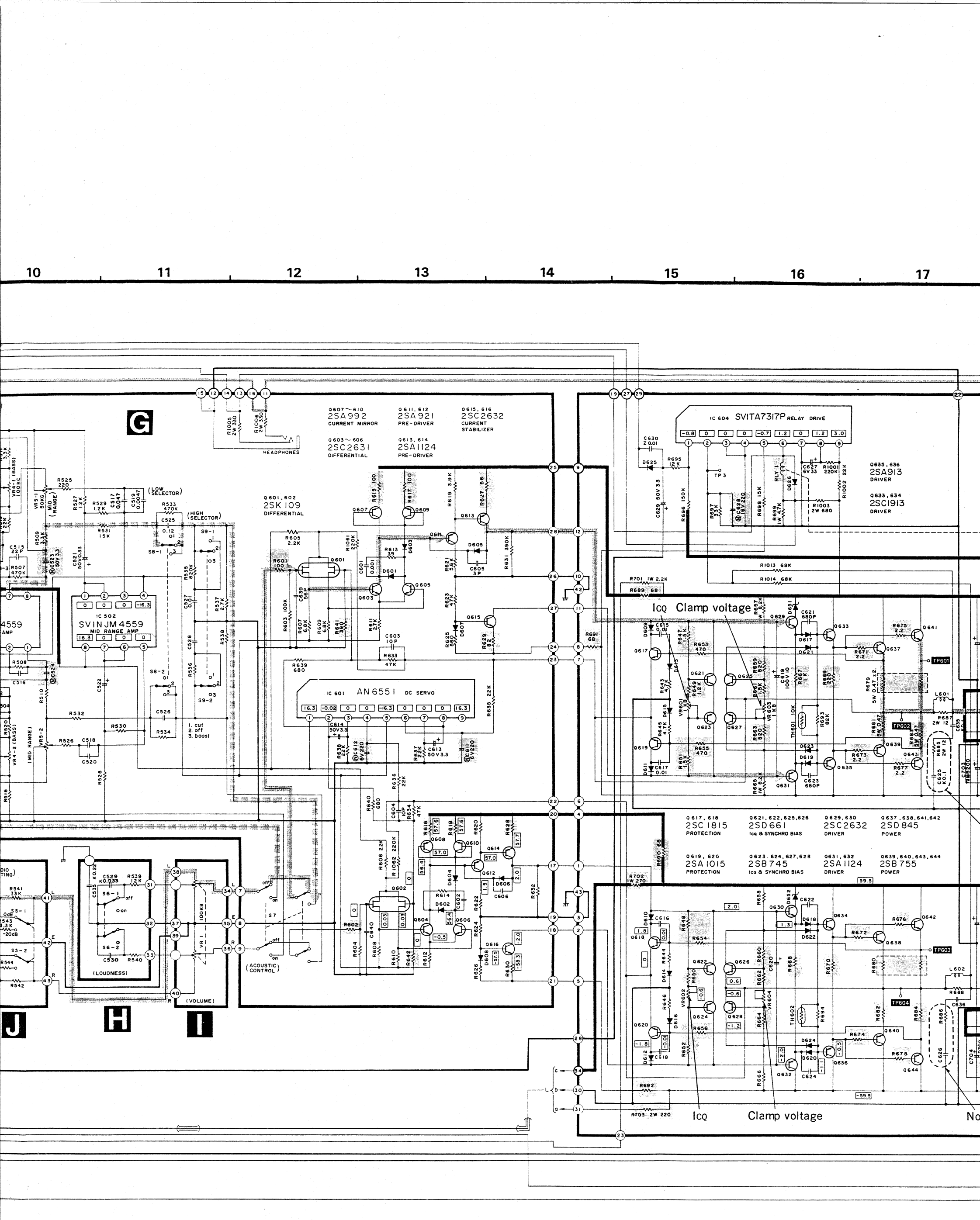
S9-3
R523 2.2K
C509 0.033
R517 3.3K
C511 0.1
C513 0.018
VR3-1 100KC
VR4-1 (BASS) 100KC
R525 220
(TREBLE) R511 680
R513 3.9K
C507 0.0033
VR5-1 50KG (MID (RANGE))
R527 1.2K
R529 1.2K
C517 0.047
C519 0.0047
(LOW SELECTOR)
R533 470K
C525 0.12 01
R531 15K
S9-1
S8-1
S8-3
R521 39K
R519 2.2K
C503 0.39
C505 50V0.33
C515 22P
R509 3.3K
C523 50V3.3
C521 50V0.33
R507 470K
C501 50V1
R505 1K
Lch
16.3 29
-16.3 30
R501 220K
R503 470K
C531 39P
IC 501 SVINJM4559 TONE AMP
C502 R506
R508
C524
R502 R504 C532
S8-4
C516
R510
C504
R522
Rch
R532
R530
C526
R534
S8-2 01
S9-2 03
1. cut
2. off
3. boost
C522
R538
R536
C528
IC 502 SVINJM4559 MID RANGE AMP
R535 820K
C527 0.01
R537 2.7K
(TREBLE) R514 C508
R512 VR3-2
C506
C514
C512
VR4-2 (BASS)
(MID RANGE) VR5-2
R526
C518
C520
S9-4 10
R524
C510
R518
R528

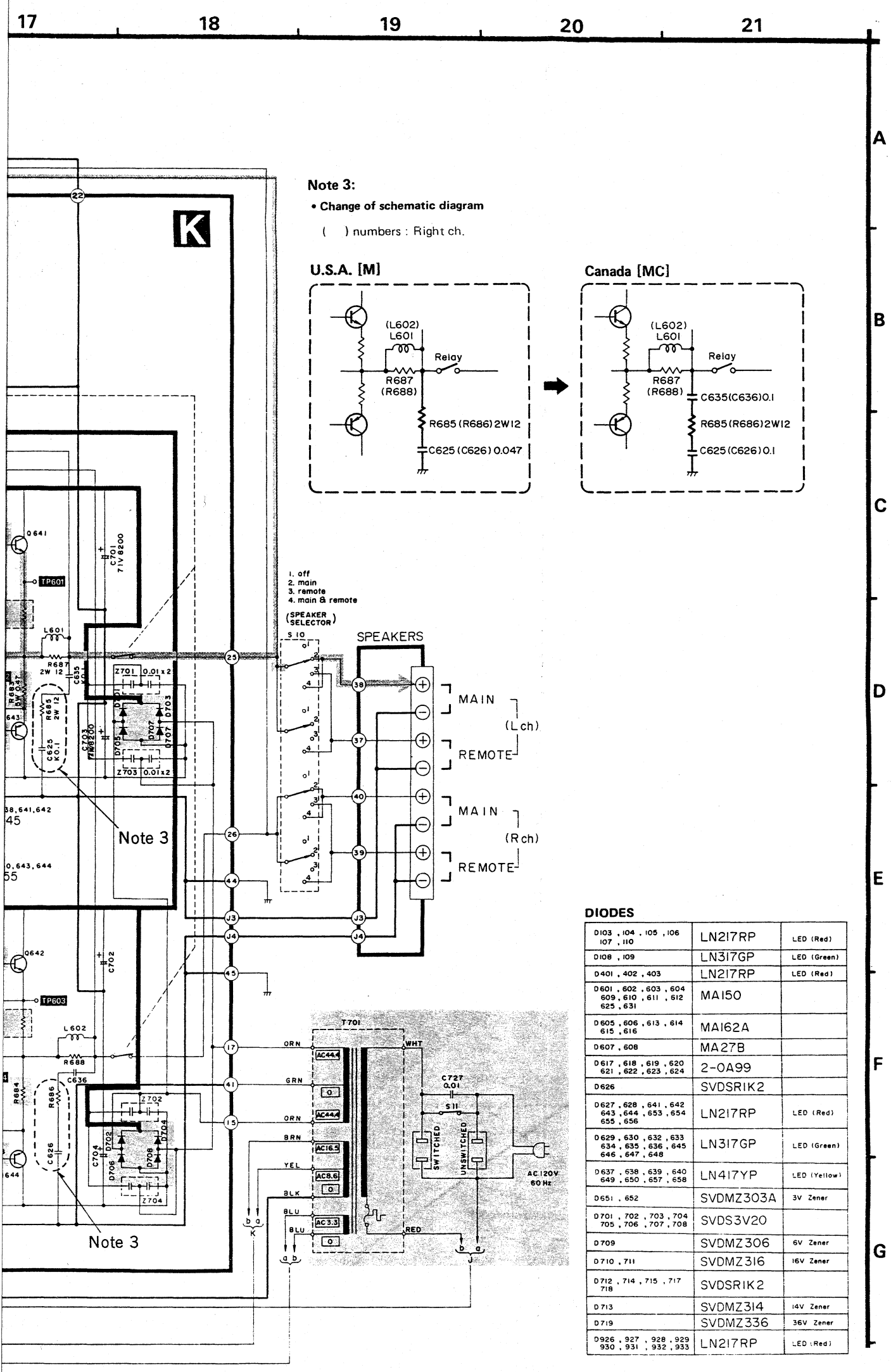
HEADPHONES
R1005 2W 330
R1006 2W 330

0607~610 2SA992 CURRENT MIRROR
0611, 612 2SA921 PRE-DRIVER
0615, 616 2SC2632 CURRENT STABILIZER
0603~606 2SC2631 DIFFERENTIAL
0613, 614 2SA1124 PRE-DRIVER

Q601, 602 2SK109 DIFFERENTIAL
R605 2.2K
R601 100
Q601
R603 100K
C639 560
R607 5.6K
R609 6.8K
R641 330
R615 100
R617 100
Q607
Q609
R619 3.9K
R627 56
Q613
Q611
D603
R613 39
C601 0.001
D601
Q603
Q605
D605
C605 3P
R621 5.6K
R631 390K
R623 47K
Q615
D607
R625 560
R629 82
C603 10P
R633 47K
R639 680
IC 601 AN6551 DC SERVO
16.3 -0.02 0 0 -16.3 0 0 0 16.3
C614 50V3.3
R639 22K
C612 6V220
C613 50V3.3
R637 22K
R635 22K
R636 22K
R640 680
C604 10P
R634 47K
R606 22K
R1062 220K
Q602
R602
C640 0.03
R604
R608
R610
R642
R612
R616 57.6
R618 57.6
R620
R628 57.7
Q608 57.0
Q610
Q614 57.0
Q612
D604
R614
D602
C602
D606
C606
R622
R632
Q604 -0.5
Q606
R624
Q616
D608 -57.5
R626
R630 -58.3

(AUDIO MUTING)
R541 33K
S5-1 0dB
R543 3.3K -20dB
S5-2
R544
R542
R545 10K
S4-1
200KB
VR 2
S4-2 stereo mono
C536 .47
R546
(MODE) (BALANCE)
**J**
C529 K0.22
C535 K0.033
R539 12K
S6-1 off on
S6-2 0
C530
R540
(LOUDNESS)
100KB
VR 1
**H**
(VOLUME)
**I**
S7 off on
(ACOUSTIC CONTROL)


10
11
12
13
14
15
16
17
G
H
I
J
HEADPHONES
R1005 2W 330
R1006 2W 330
Q607~610 2SA992 CURRENT MIRROR
Q611, 612 2SA921 PRE-DRIVER
Q615, 616 2SC2632 CURRENT STABILIZER
Q603~606 2SC2631 DIFFERENTIAL
Q613, 614 2SA1124 PRE-DRIVER
Q601, 602 2SK109 DIFFERENTIAL
IC 604 SVITA7317P RELAY DRIVE
Q635, 636 2SA913 DRIVER
Q633, 634 2SC1913 DRIVER
IC 502 SVINJM4559 MID RANGE AMP
IC 601 AN6551 DC SERVO
(LOW SELECTOR)
(HIGH SELECTOR)
(MID RANGE)
(LOUDNESS)
(VOLUME)
(ACOUSTIC CONTROL)
1. cut
2. off
3. boost
Icq Clamp voltage
Q617, 618 2SC1815 PROTECTION
Q621, 622, 625, 626 2SD661 Icq & SYNCHRO BIAS
Q629, 630 2SC2632 DRIVER
Q637, 638, 641, 642 2SD845 POWER
Q619, 620 2SA1015 PROTECTION
Q623, 624, 627, 628 2SB745 Icq & SYNCHRO BIAS
Q631, 632 2SA1124 DRIVER
Q639, 640, 643, 644 2SB755 POWER
TP601
TP602
TP603
TP604
Icq
Clamp voltage
No




**DIODES**

| | | |
|---|---|---|
| D103 , 104 , 105 , 106 107 , 110 | LN217RP | LED (Red) |
| D108 , 109 | LN317GP | LED (Green) |
| D401 , 402 , 403 | LN217RP | LED (Red) |
| D601 , 602 , 603 , 604 609 , 610 , 611 , 612 625 , 631 | MA150 | |
| D605 , 606 , 613 , 614 615 , 616 | MA162A | |
| D607 , 608 | MA27B | |
| D617 , 618 , 619 , 620 621 , 622 , 623 , 624 | 2-0A99 | |
| D626 | SVDSR1K2 | |
| D627 , 628 , 641 , 642 643 , 644 , 653 , 654 655 , 656 | LN217RP | LED (Red) |
| D629 , 630 , 632 , 633 634 , 635 , 636 , 645 646 , 647 , 648 | LN317GP | LED (Green) |
| D637 , 638 , 639 , 640 649 , 650 , 657 , 658 | LN417YP | LED (Yellow) |
| D651 , 652 | SVDMZ303A | 3V Zener |
| D701 , 702 , 703 , 704 705 , 706 , 707 , 708 | SVDS3V20 | |
| D709 | SVDMZ306 | 6V Zener |
| D710 , 711 | SVDMZ316 | 16V Zener |
| D712 , 714 , 715 , 717 718 | SVDSR1K2 | |
| D713 | SVDMZ314 | 14V Zener |
| D719 | SVDMZ336 | 36V Zener |
| D926 , 927 , 928 , 929 930 , 931 , 932 , 933 | LN217RP | LED (Red) |

**Notes 2:**

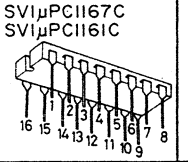
1. **S4-1, S4-2** : Mode switch in "**stereo**" position. (stereo ⟷ mono)
2. **S5-1, S5-2** : Audio muting switch in "**0 dB**" position. (0 dB ⟷ –20 dB)
3. **S6-1, S6-2** : Loudness switch in "**off**" position.
4. **S7** : Acoustic control switch in "**off**" position.
5. **S8-1 ~ S8-4** : Acoustic low selector switch in "**off**" position. (① low cut ⟷ ② off ⟷ ③ low boost)
6. **S9-1 ~ S9-4** : Acoustic high selector switch in "**off**" position. (① high cut ⟷ ② off ⟷ ③ high boost)
7. **S10** : Speaker selector switch in "**main**" position. (① off ⟷ ② main ⟷ ③ remote ⟷ ④ main & remote)
8. **S11** : Power source switch in "**on**" position.
9. **S700-1, S700-2** : FM-AM muting/FM mode switch in "**on/FM auto**" position. (on/FM auto/⟷ off/FM mono)
10. **S701-1 ~ S701-4**: FM IF band selector switch in "**normal**" position. (normal ⟷ narrow)
11. **S702** : FM high-blend switch in "**off**" position.
12. **S703 ~ S705** : FM de-emphasis selector switch in "**75μs**" position. (S703 : 75μs S704 : 50μs S705 : 25μs)
13. **S706-1, S706-2** : Power display range selector switch in "**X1**" position.
14. **S707-1, S707-2** : Power display switch in "**on**" position.

**IMPORTANT SAFETY NOTICE**

The shaded area on this schematic diagram incorporates special features important for safety. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

*** Terminal guide of transistors and IC's**

AN217P
SVIM74LS42P
SVITC5067BP
SVIμPC1167C
SVIμPC1161C

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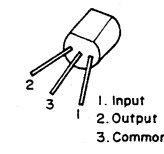
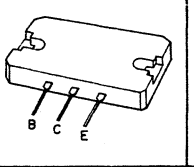
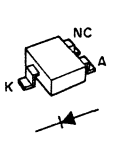



2SB745 , 2SB755
2SD845




MA151K

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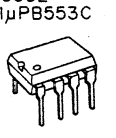

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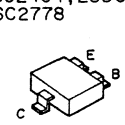
2SC2778

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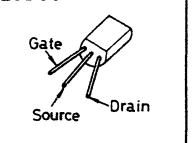
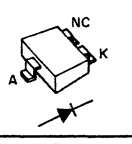



MA151A

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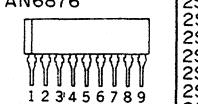


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2SA1124
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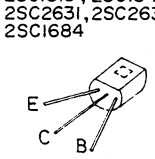
2SC1815 , 2SC1845
2SC2631, 2SC2632
2SC1684

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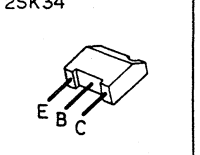
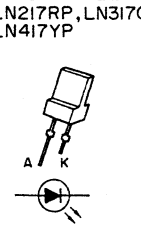



LN217RP, LN317GP
LN417YP

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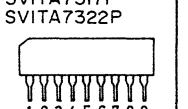
SVITA7322P

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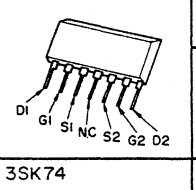
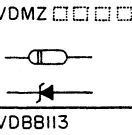



SVDMZ □□□□



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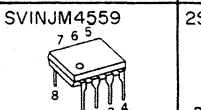


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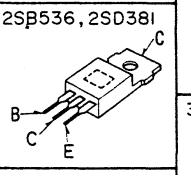


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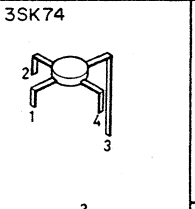


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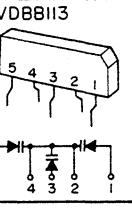


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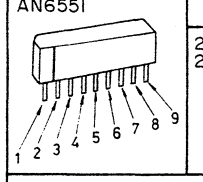
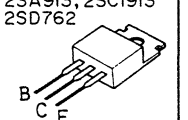



2SA913, 2SC1913
2SD762

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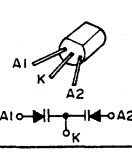


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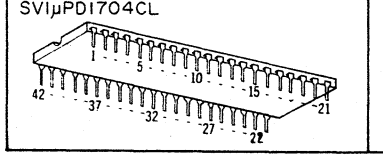
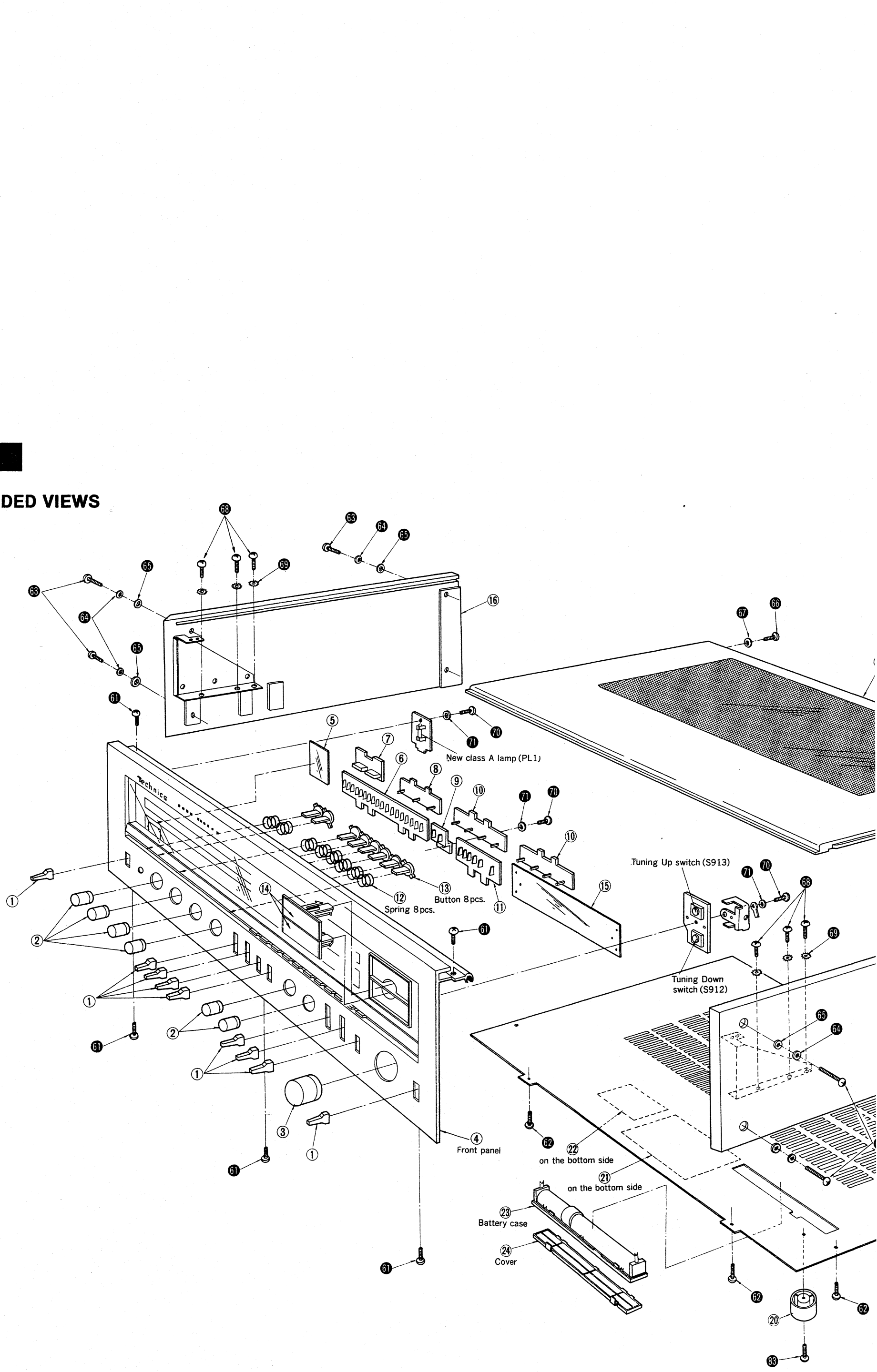
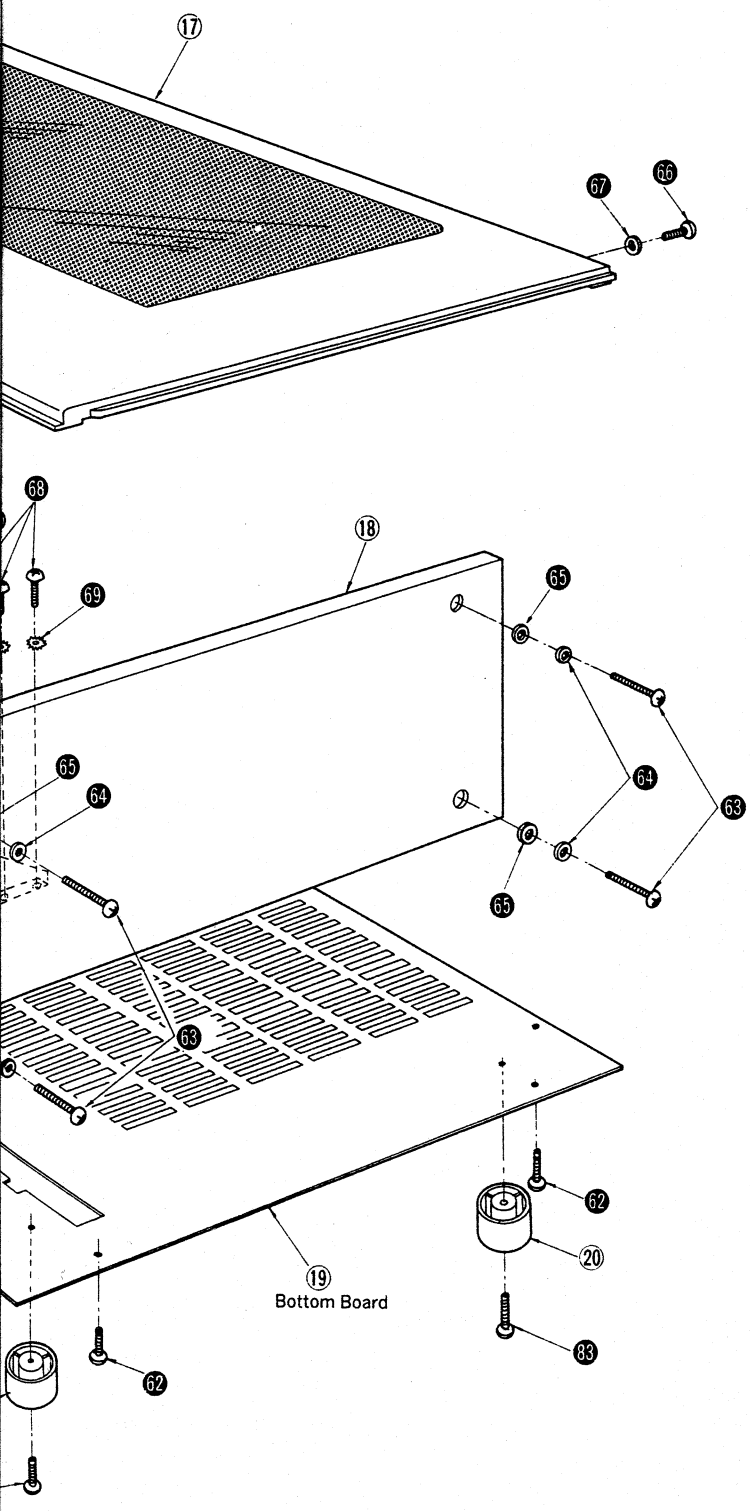


## ■ EXPLODED VIEWS

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19
Bottom Board
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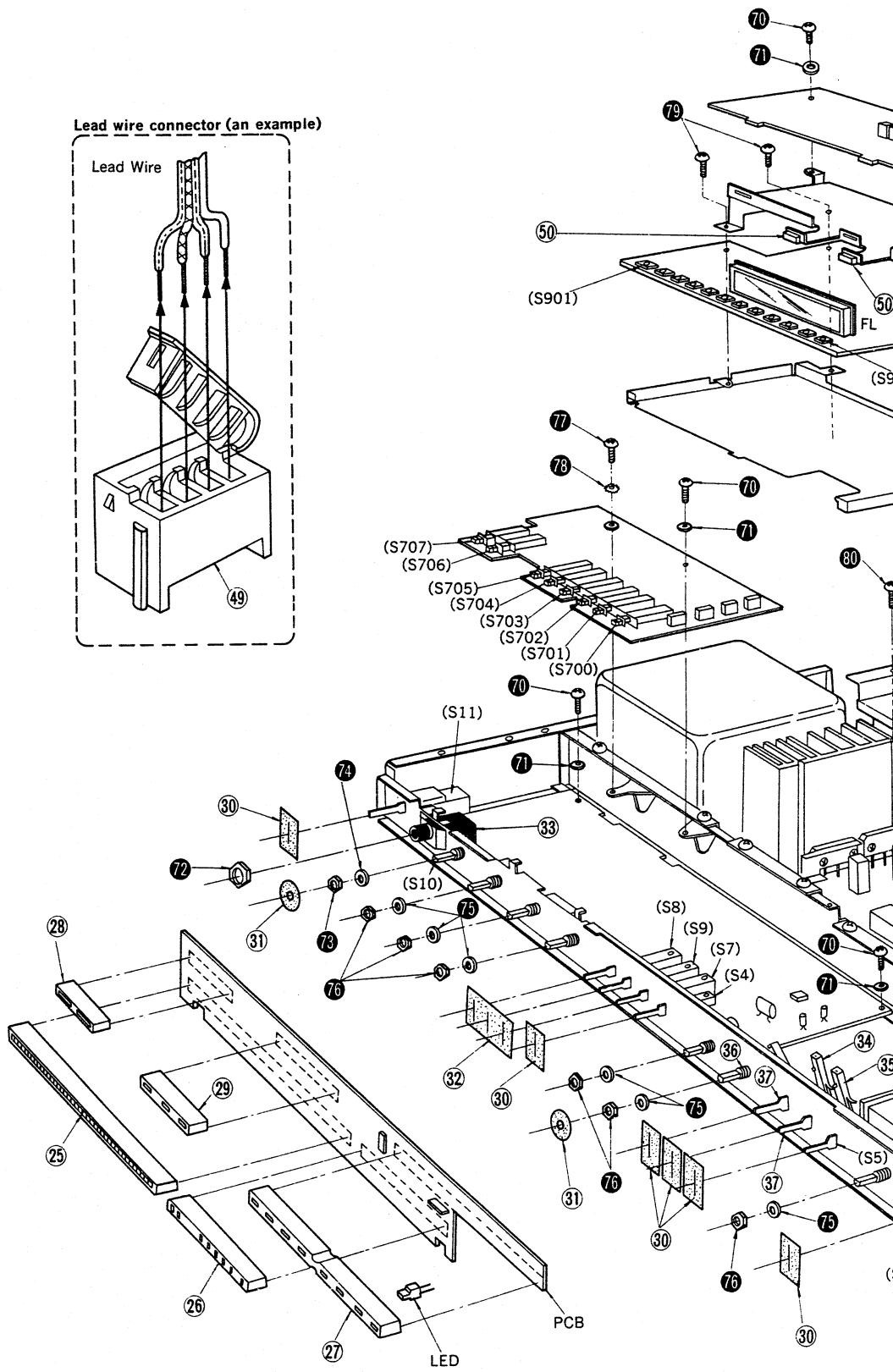
83


Lead wire connector (an example)
Lead Wire
49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(S8)
(S9)
(S7)
(S4)
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(S5)
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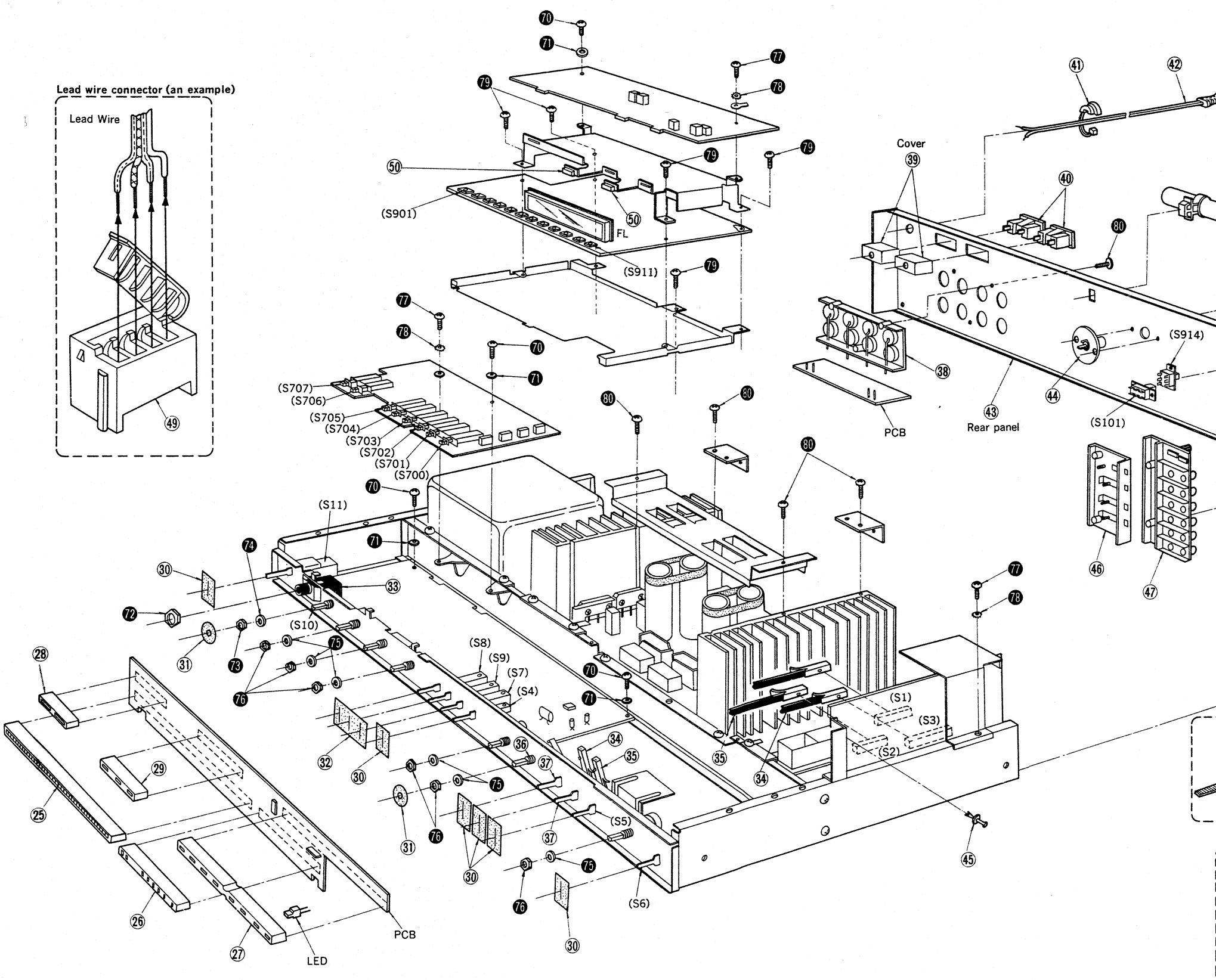
76
26
27
LED
PCB
30

Lead wire connector (an example)

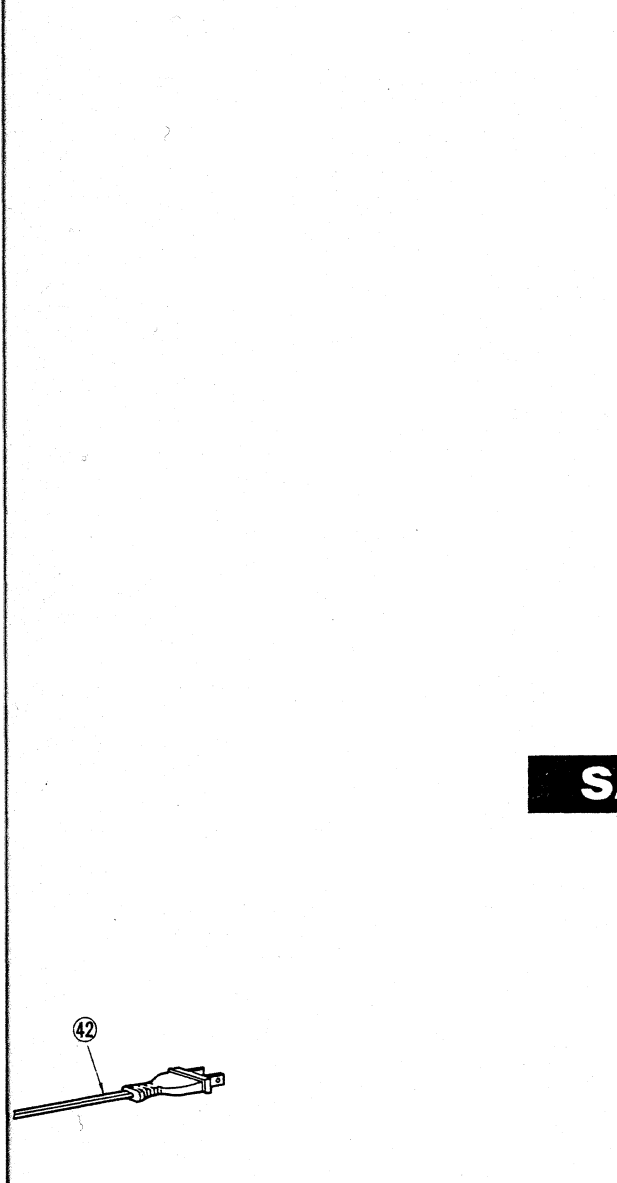


# ■ REPLACEMENT PARTS LIST..... Cabinet & Chassis Parts

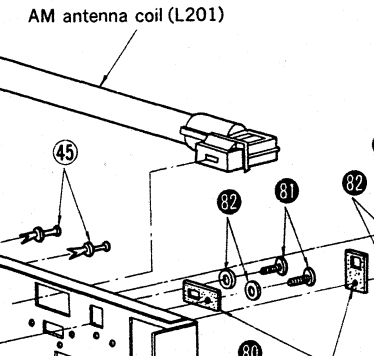
**Notes:** 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

**Areas**
* [M] is available in U.S.A.
* [MC] is available in Canada.





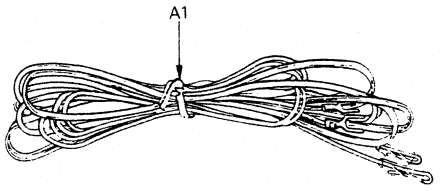





| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| **CABINET and CHASSIS PARTS** | | | |
| 1 | | SBD29 | Knob, Lever Switches |
| 2 | | SBN887–3 | Knob, Tone Control/Balance/Selector |
| 3 | | SBN885–5 | Knob, Volume Control |
| 4 | | SYW281 | Panel, Front Ass'y |
| 5 | | SDE255 | Filter, New Class A Badge Light |
| 6 | | SGL93 | Light Guide, Power Level Indicator |
| 7 | | SGL87 | Light Guide, Protection/Safety Indicator |
| 8 | | SGL89 | Light Guide, Program Indicator |
| 9 | | SGL95 | Light Guide, IF Band Indicator |
| 10 | | SGL91 | Light Guide, Preset Station Indicator |
| 11 | | SGL97 | Light Guide, Signal Strength Indicator |
| 12 | | SUS123–1 | Spring, Push Switches |
| 13 | | SBC205–3 | Button, Push Switches |
| 14 | | SBC275 | Button, Tuning Up/Down Switch |
| 15 | | SDU29 | Filter, Display Window |
| 16 | | SYK953 | Side Panel, Left Ass'y |
| 17 | | SYK951 | Top Panel, Ass'y |
| 18 | | SYK963 | Side Panel, Right Ass'y |
| 19 | | SKU8610 | Bottom Board |
| 20 | | SKX219–1 | Foot |
| 21 | | SQX4733 | Label, Battery Caution |
| 22 | | SQX4435–2 | Label, Bottom Board Caution |
| 23 | | SYE697 | Case, Battery Ass'y |
| 24 | | SJB9001 | Cover, Battery Case |
| 25 | | SHG1557 | Bracket, Power Level Indicator LED |
| 26 | | SHG1559 | Bracket, IF Band/Signal Strength LED |
| 27 | | SHG1561 | Bracket Preset Station Indicator LED |
| 28 | | SHG1565 | Bracket, Protection/Safety Indicator LED |
| 29 | | SHG1563 | Bracket, Program Indicator LED |
| 30 | | SHS2425 | Fiber, Lever Switches |
| 31 | | SHS6045 | Fiber, Speaker/Selector |
| 32 | | SHS2429 | Fiber, Lever Switches |
| 33 | | XCJ6P21B–A1 | Jack, Headphones |
| 34 | | ESA30227B | Wire, Remote Control, Rec Mode |
| 35 | | ESA30225B | Wire, Remote Control, Tape Monitor |
| 36 | | ESA3362B | Remote Control, With Wire, Selector Switch |
| 37 | | ESA2268 | Remote Control, Rec Mode/Tape Monitor |
| 38 | | SJF4813 | Terminal, Speakers |
| 39 | | SMX13–1 | Cover, AC Outlet |
| 40 | ⚠ | SJSA66–2 | Socket, AC Outlet |
| 41 | | SFHK040L | Bushing, AC Cord |
| 42 | ⚠ | **RJA9Y** | AC Cord |
| 43 | | SGP2330A | Rear Panel |
| 44 | | SJFA3101–1 | Terminal, 4ch. MPX Output |
| 45 | | SHR401–1 | Latch, Terminal M'tg |
| 46 | | SJF4419–2 | Terminal, Antenna |
| 47 | | SJF8023–2 | Terminal, Input |
| 48 | | SHR5073–1 | Stopper, FM Antenna/Allocation Selector |

| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| 49 | | SJS5627 | Connector, Lead Wire, 6 pin |
| | | SJS5421 | Connector, Lead Wire, 4 pin |
| | | SJS5327 | Connector, Lead Wire, 3 pin |
| 50 | | SHG1529 | Cushion, FL, Rubber |
| 51 | | SMX51 | Spacer, Resistor (R702, 703) |
| 52 | | SHR301 | Lead Clamper |
| **SCREWS, NUTS and WASHERS** | | | |
| 61 | | **XTB3+8BFZ** | Screw, Tapping, ⊕ 3 x 8 (Front Panel) |
| 62 | | **XTB3+8BFN** | Screw, Tapping, ⊕ 3 x 8 (Bottom Board) |
| 63 | | **XSN4+25BVS** | Screw, ⊕ 4 x 25 (Side Panel) |
| 64 | | **XWA4BFZ** | Washer, Spring, $\phi$ 4 |
| 65 | | **XWG4FZ** | Washer, Plain, $\phi$ 4 |
| 66 | | **XTV3+8BFZ** | Screw, Tapping, ⊕ 3 x 8 (Top Panel) |
| 67 | | **XWG3FZ** | Washer, Plain, $\phi$ 3 |
| 68 | | **XTB4+10BFN** | Screw, Tapping, ⊕ 4 x 10 (Side Panel) |
| 69 | | **XWC4C** | Washer, External Toothed Lock, $\phi$ 4 |
| 70 | | **XTV3+10BFN** | Screw, Tapping, ⊕ 3 x 10 (P.C.B.) |
| 71 | | **XWG3** | Washer, Plain, $\phi$ 3 |
| 72 | | **XNS12** | Nut, M12 (Headphone Jack) |
| 73 | | **XNS9** | Nut, M9 (Speaker Selector) |
| 74 | | **XWV9** | Washer, Spring, $\phi$ 9 |
| 75 | | **XWV8** | Washer, Spring, $\phi$ 8 |
| 76 | | **XNS8** | Nut, M8 (Volume/Balance/Tone/Selector) |
| 77 | | **XTB3+8BFZ** | Screw, Tapping, ⊕ 3 x 8 (P.C.B.) |
| 78 | | **XWC3B** | Washer, External Toothed Lock, $\phi$3 |
| 79 | | **XTB3+8BFN** | Screw, Tapping, ⊕ 3 x 8 (Shield Cover) |
| 80 | | **XTB3+10BFZ** | Screw, Tapping, ⊕ 3 x 10 (Chassis) |
| 81 | | **XSN3+6BVS** | Screw, ⊕ 3 x 6 (FM Antenna/Allocation) |
| 82 | | **XWA3BFZ** | Washer, Spring, $\phi$ 3 |
| 83 | | **XTB3+14BFN** | Screw, Tapping, ⊕ 3 x 14 (Feet) |
| **ACCESSORY** | | | |
| A1 | | SSA267 | Cord, FM Indoor Antenna |
| **PACKING PARTS** | | | |
| P1 | | SPP655 | Polyethylene Bag |
| P2 | | SPS2765 | Pad, Left Side |
| P3 | | SPS2767 | Pad, Right Side |
| **P4** [M] only | | SPG2635 | Carton Box |
| **P4** [MC] only | | SPG2637 | Carton Box |
| **P5** [M] only | | SQF10447–1 | Instructions Book, Printed Matter |
| **P5** [MC] only | | SQF10449 | Instructions Book, Printed Matter |

## • Accessory



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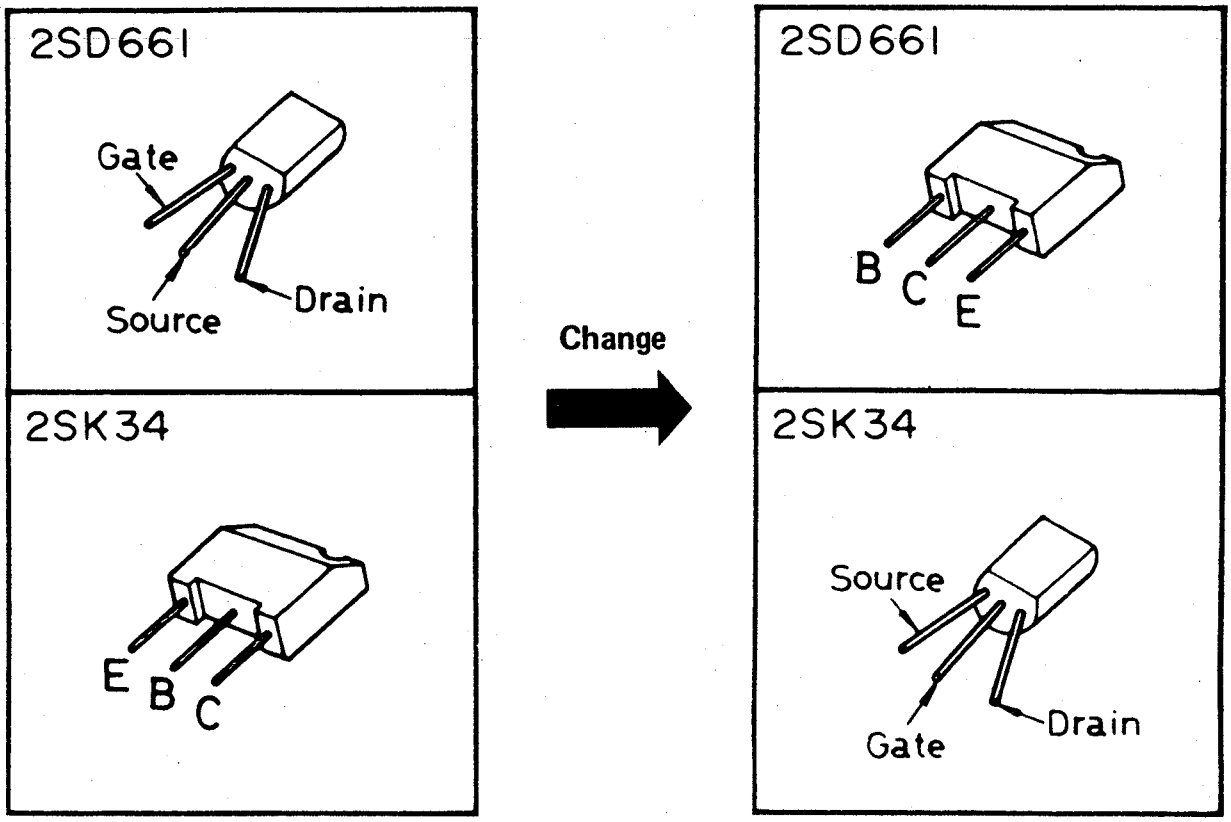
# Correction of the Terminal Guides on page 41



ORDER NO. SD8005-1751

# Service Manual

FM/AM Stereo Receiver

# SA-818

[FE], [ES]

**Areas**

[FE] is available in far East PX.
[ES] is available in European Military.

**For additional information, please refer to the service manual for Model No. SA-818 [M], [MC].**

Notes: * This service manual included only the change of the **SA-818 [M], [MC]** service manual (ORDER NO. SD8004-1728).
* When servicing model **SA-818 [FE or ES]**, this service manual and **SA-818 [M], [MC]** (ORDER NO. SD8004-1728) service manual should be used together.

## CHANGES

## ■ REPLACEMENT PARTS LIST

| Ref. No. | Change of Part No. | | Part Name & Description | Per Set (Pcs.) | | Remarks |
|---|---|---|---|---|---|---|
| | **SA-818 (ORDER NO. SD8004-1728)** ➡ | **SA-818 [FE], [ES]** | | | | |
| | | | **TRANSFORMER** | | | |
| T701 | SLT5R39 | SLT5S45 | Transformer, Power Source | 1 | | |
| | | | **FUSES** | | | |
| F1 | XBA1F80NU14 | XBA2E100NS1 | Fuse , Power Source, 10A (250V) | 1 | | |
| F3 | Addition | XBA2C50TR0 | Fuse, Power Source, 5A (250V) | 1 | | |
| | | | **SWITCHES** | | | |
| S11 | SSL133 | ESL21210S | Switch, Power Source | 1 | | |
| S12 | Addition | ESE37200 | Switch, Voltage Adjuster | 1 | | |
| | | | **CAPACITORS** | | | |
| C625, 626 | ECQM1473KZ [M]<br>ECQM1H104KZ [MC] | ECQM1473KZ | Polyester, 0.047$\mu$F, 125V, ± 10% | 2 | | |
| C635, 636 | ECQM1H104KZ [MC] only | Deletion | Polyester | 0 | | |
| C727 | ECKDMY103PF | Deletion | Ceramic | 0 | | |
| C731, 732 | Addition | ECKDKC103PF | Ceramic, 0.01$\mu$F, 400VAC, $\pm^{100}_{0}$% | 2 | | |
| | | | **CABINET and CHASSIS PARTS** | | | |
| 42 | **RJA9Y** | RJA52ZB | AC Cord | 1 | | |
| 43 | SGP2330A | SGP2330–1A | Rear Panel | 1 | | ○ |
| 53 | Addition | SJFA5101 | Holder, Fuse | 1 | | |
| 54 | Addition | SUV453 | Cover, Voltage Adjuster | 1 | | |

Technics

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Matsushita Electric Industrial Co., Ltd.
17-15, 6-chome, Shinbashi, Minato-ku, Tokyo 105 Japan

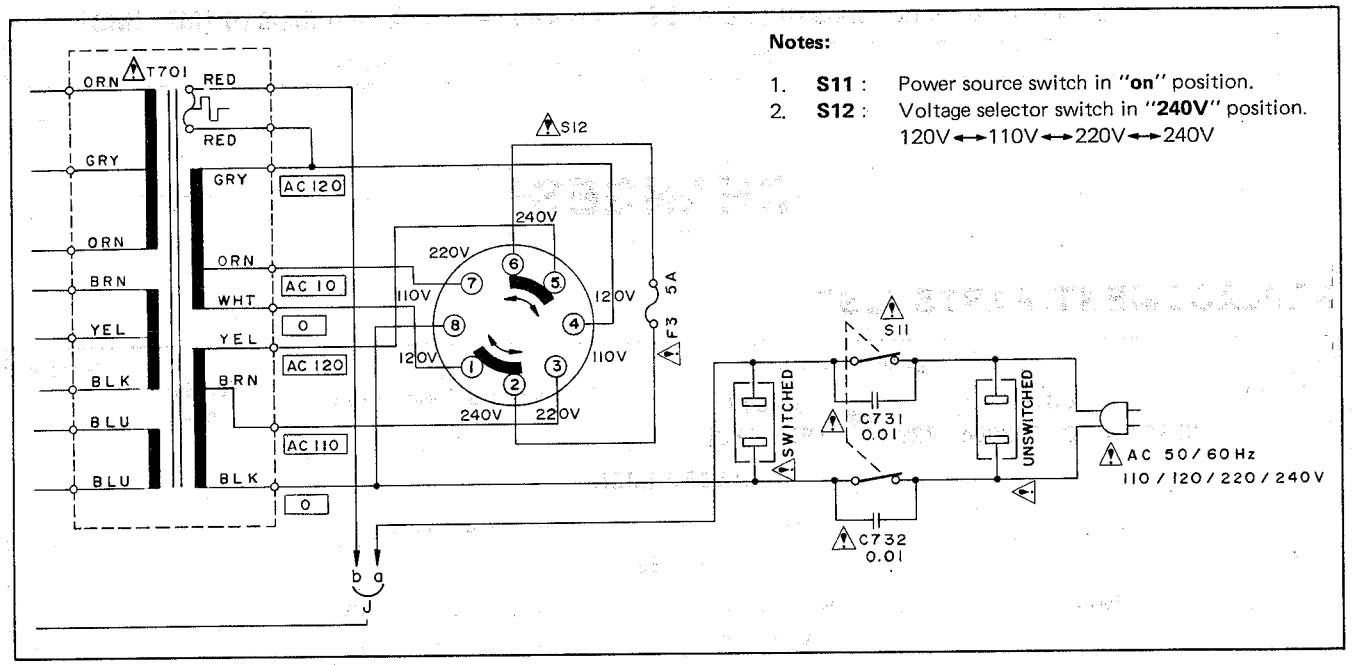
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

# SA-818

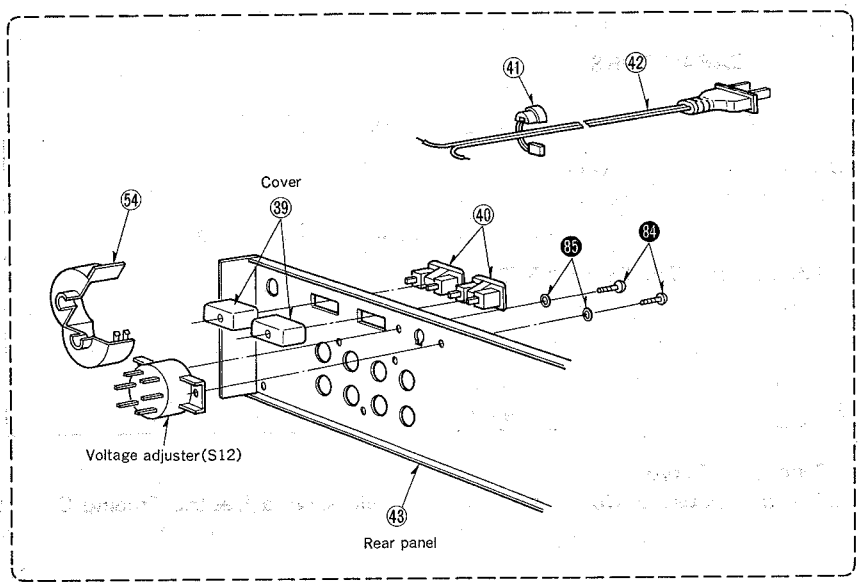
| Ref. No. | Change of Part No. | | Part Name & Description | Per Set (Pcs.) | | Remarks |
|---|---|---|---|---|---|---|
| | SA-818 (ORDER NO. SD8004-1728) → | SA-818 [FE], [ES] | | | | |
| | | | **SCREWS** | | | |
| ⑧④ | Addition | XSN3+6BVS | Screw, ⊕ 3 x 6 (Voltage Adjuster) | 2 | | |
| ⑧⑤ | Addition | XWA3BFZ | Washer, Spring ϕ3 | 2 | | |
| ⑧⑥ | Addition | XTN3+8B | Screw, ⊕ 3 x 8 (Fuse Holder) | 1 | | |
| | | | **ACCESSORIES** | | | |
| A2 | Addition | RJP75 | Plug Adaptor, Power Source | 1 | | |
| A3 | Addition | RJP74–1 | Plug Adaptor, Power Source | 1 | | |
| | | | **PACKING PARTS** | | | |
| P4 | SPG2635 [M] only<br>SPG2637 [MC] only | SPG2635 | Carton Box | 1 | | |
| P5 | SQF10447–1 [M] only<br>SQF10449 [MC] only | SQF10453 | Instructions Book, Printed Matter | 1 | | ○ |

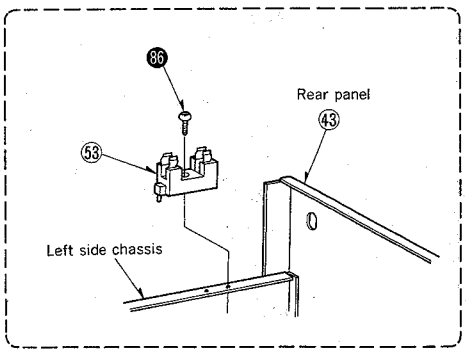
## ■ CHANGE OF SCHEMATIC DIAGRAM

**• Power source circuit**




## ■ CHANGE OF EXPLODED VIEWS

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ORDER NO. SD8006-1768

# Service Manual

FM/AM Stereo Receiver

# SA-818, 818(K)

[FEE]

Areas

[FEE] is available in European Audio Club.

*** The colors of this model include silver and black. The black type model is provided with (K) in the Service Manual.**

**For additional information, please refer to the service manual for Model No. SA-818 [M], [MC].**

Notes: * This service manual included only the change of the **SA-818 [M], [MC]** service manual (ORDER NO. SD8004-1728).
* When servicing model **SA-818/(K) [FEE]**, this service manual and **SA-818 [M], [MC]** (ORDER NO. SD8004-1728) service manual should be used together.

## CHANGES

Note: (K) -marked parts are used for black type only.

Black type model No. SA-818(K)

## ■ REPLACEMENT PARTS LIST

| Ref. No. | Change of Part No. SA-818 (ORDER NO. SD8004-1728) | Change of Part No. SA-818/(K) [FEE] | Part Name & Description | Per Set (Pcs.) | | Remarks |
|---|---|---|---|---|---|---|
| | | **TRANSFORMER** | | | | |
| T701 | SLT5R39 | SLT5S45 | Transformer, Power Source | 1 | | |
| | | **FUSES** | | | | |
| F1 | XBA1F80NU14 | XBA2E100NS1 | Fuse, Power Source, 10A (250V) | 1 | | |
| F3 | Addition | XBA2C50TR0 | Fuse, Power Source, 5A (250V) | 1 | | |
| | | **SWITCHES** | | | | |
| S11 | SSL133 | ESL21210S | Switch, Power Source | 1 | | |
| S12 | Addition | ESE37200 | Switch, Voltage Adjuster | 1 | | |
| | | **CAPACITORS** | | | | |
| C625, 626 | ECQM1473KZ [M] / ECQM1H104KZ [MC] | ECQM1473KZ | Polyester, 0.047μF, 125V, ± 10% | 2 | | |
| C635, 636 | ECQM1H104KZ [MC] only | Deletion | Polyester | 0 | | |
| C727 | ECKDMY103PF | Deletion | Ceramic | 0 | | |
| C731, 732, | Addition | ECKDKC103PF | Ceramic, 0.01μF, 400VAC, $^{+100}_{0}$% | 2 | | |
| | | **CABINET and CHASSIS PARTS** | | | | |
| 4 | SYW281 | SYW281 | Panel, Front Ass'y | 1 | | |
| | | SYW285 (K) | Panel, Front Ass'y (Black) | 1 | | |
| 5 | SDE255 | SDE255 | Filter, New Class A Badge Light | 1 | | |
| | | SDE255–1 (K) | Filter, New Class A Badge Light (Black) | 1 | | |
| 42 | **RJA9Y** | RJA52ZB | AC Cord | 1 | | |
| 43 | SGP2330A | SGP2330–1A | Rear Panel | 1 | | ○ |
| 53 | Addition | SJFA5101 | Holder, Fuse | 1 | | |
| 54 | Addition | SUV453 | Cover, Voltage Adjuster | 1 | | |


Technics

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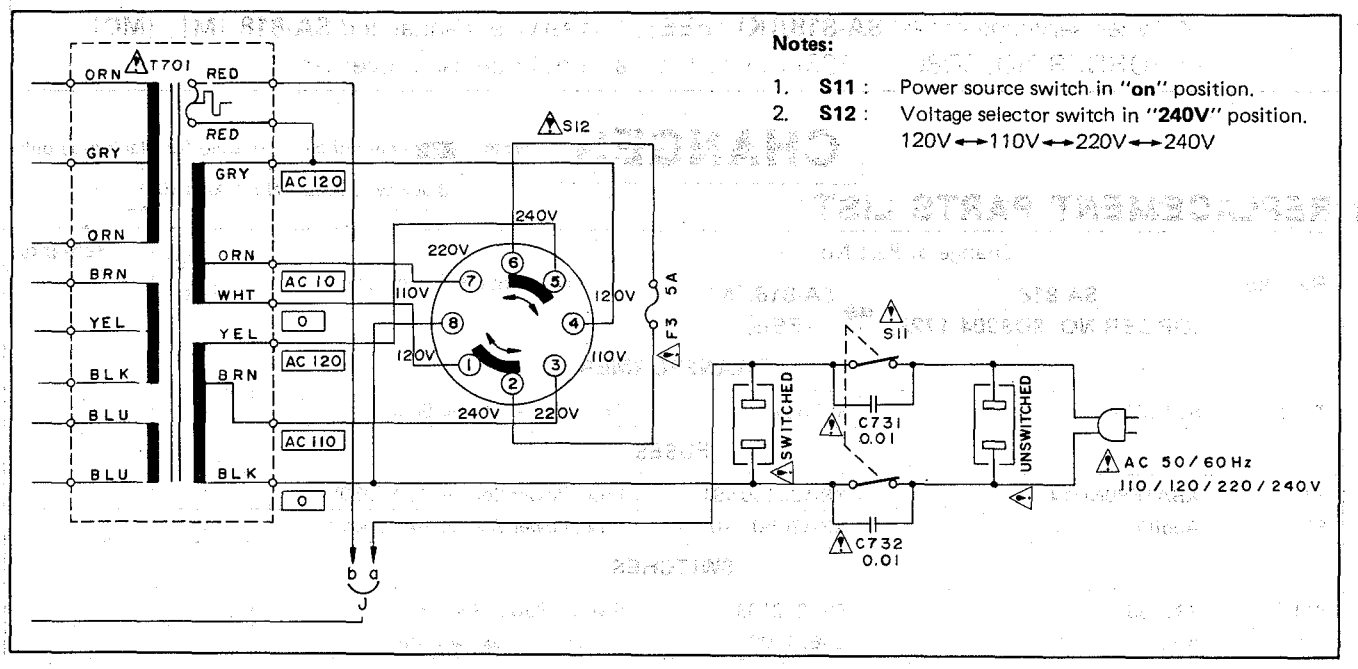
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

# SA-818

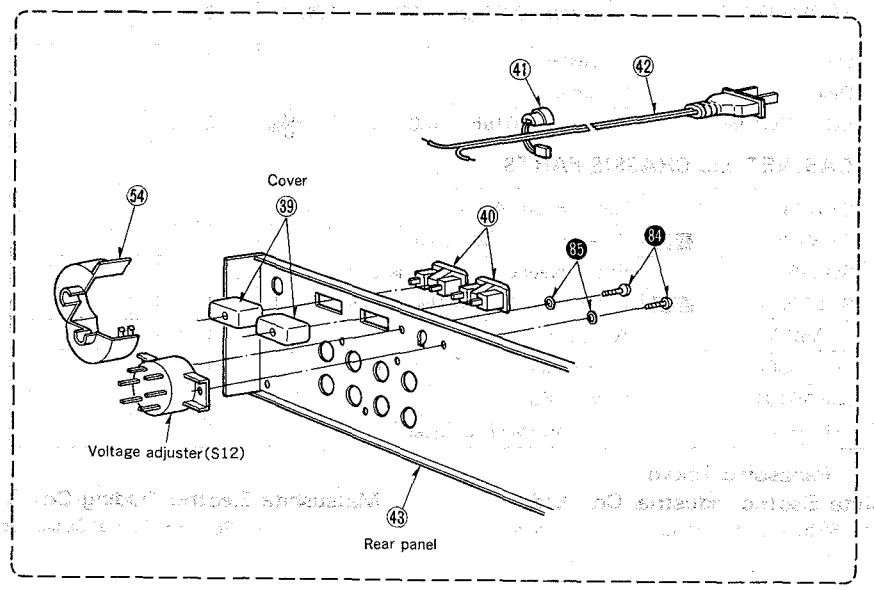
| Ref. No. | Change of Part No. SA-818 (ORDER NO. SD8004-1728) | Change of Part No. SA-818/(K) [FEE] | Part Name & Description | Per Set (Pcs.) | | Remarks |
|---|---|---|---|---|---|---|
| | | **SCREWS** | | | | |
| 84 | Addition | XSN3+6BVS | Screw, ⊕ 3 x 6 (Voltage Adjuster) | 2 | | |
| 85 | Addition | XWA3BFZ | Washer, Spring ϕ3 | 2 | | |
| 86 | Addition | XTN3+8B | Screw, ⊕ 3 x 8 (Fuse Holder) | 1 | | |
| | | **ACCESSORIES** | | | | |
| A2 | Addition | RJP75 | Plug Adaptor, Power Source | 1 | | |
| A3 | Addition | RJP74–1 | Plug Adaptor, Power Source | 1 | | |
| | | **PACKING PARTS** | | | | |
| P4 | SPG2635 [M] only<br>SPG2637 [MC] only | SPG2635 | Carton Box | 1 | | |
| P5 | SQF10447–1 [M] only | SQF10455 | Instructions Book, Printed Matter | 1 | | ○ |
| | SQF10449 [MC] only | SQF10451 (K) | | | | |

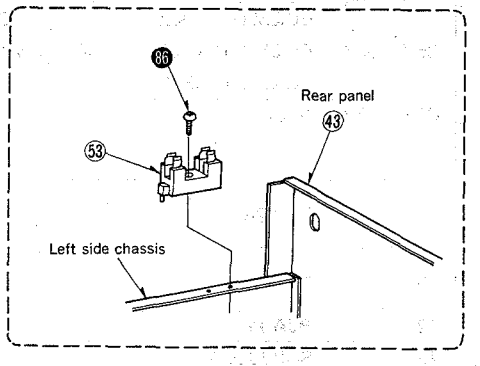
## ■ CHANGE OF SCHEMATIC DIAGRAM

**• Power source circuit**




## ■ CHANGE OF EXPLODED VIEWS

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